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HAROLD BURNHAM

CHINESE VELVETS

Chinese Velvets

Occasional Paper 2

ART AND ARCHAEOLOGY DIVISION

ROYAL ONTARIO MUSEUM

TORONTO

HAROLD B. BURNHAM

Chinese Velvets

A TECHNICAL STUDY

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Contents

Introduction, *1*

Historical Survey, *5*

The Sixteenth Century, *9*

Chinese Velvets, *17*

Technical Analyses, *31*

Plates

I View of Macao from the Outer Harbour, about 1655.

II Embroidered Velvet Panel. Sino-Portuguese. Seventeenth century, first quarter.

III Velvet Picture, painted and partly cut. *c.* 1880.

IV Ming Dragon Robe Velvet. Early seventeenth century.

V Ming Dragon Robe Velvet. Detail.

VI Velvet Carpet, detail. Seventeenth century, last quarter.

VII Velvet Carpet, detail of reverse.

VIII Velvet Square, late seventeenth century.

IX Fragment of velvet. K'ang Hsi period (1662–1722).

X Velvet Coat. Eighteenth century.

XI Fragment of Velvet. Early nineteenth century.

XII Velvet. Nineteenth century, first half.

XIII Velvet Table Cover. Mid-nineteenth century.

XIV Velvet Hanging. 1900–1910.

XV Velvet Carpet. 1910–20.

Figures

1 Entering plans and tie-ups for six shaft velvet weaves.

2 Modified 3/1 twill with pattern weft.

3 Foundation fabric derived from 3/1 twill.

4 Modified 3/1 twill with binder warp and pattern weft.

5 Modified 3/1 twill with binder warp. Reverse.

6 6-end irregular satin with binder warp and pattern weft.

7 6-end irregular satin with uncut pile.

8 Selvage—6-end irregular satin.

9 5/1 broken twill. Proportion, 3:1.

10 Selvage—4/2 twill.

11 5/1 broken twill. Proportion, 6:1.

12 Modified 3/1 twill with pile in two colours.

13 Modified 3/1 twill.

14 Selvage—modified 2/2 twill.

Introduction[1]

For centuries the spice trade flowed from India and the East Indies to the Persian Gulf and the Red Sea, then overland by caravan to the Levantine ports and Alexandria; from here it was carried by boat to Europe. At first the luxuries it supplied went direct to Rome, but during the Middle Ages the last stage of the journey came under the control of Venice and the other seafaring city-states of Italy; the profits they derived from the trade supported the splendour and culture they enjoyed. The wealth gained by Arabic merchants fostered the romantic tales of Scheherazade, and nourished the power of militant Islam to wage aggressive war. The most desired and profitable item was pepper, "the great preserver," and by the fifteenth century an arroba (about 128 lb.) of this commodity, which had a value of 2½ to 3 ducats in India, brought 80 ducats in Alexandria and 100 ducats in Venice. At this time, with the spread of Islam, the eastern part of the carrying trade was controlled by the Muslim powers of the northern littoral of the Indian Ocean, and the western part largely by Venice, whose consequent wealth was the envy of Europe. From Italy pepper travelled over the Alps, and down the Rhine to the cities of northern Europe, and by sea and land to France, Spain, and Portugal.

The arrival of Vasco da Gama in India in 1498 was the first step in breaking the monopoly of the spice trade, and transferring it and its profits to the Crown of Portugal. The rapid rise, within a short generation, of the Portuguese Empire in the Far East is one of the most fascinating and most neglected chapters of modern history. The early Viceroys were able men, Francisco de Almeida with his insistence on naval power, and Affonso de Alboquerque, the greatest of them all, with his policy of controlling not only all centres of trade, but also the entire shipping of the area. With their sails bearing The Cross of Christ, the Portuguese, a crusading nation supported and tempered by the Church, soon controlled or displaced the local Muslim rulers. The capture of Malacca in 1511 was one of their most important achievements. As Tomé Pires, writing between 1512–15, says in his *Suma Oriental*: "Whoever is lord of Malacca has his hand on the throat of Venice."[2] Malacca, by its situation, controlled the traffic from the Spice Islands, and the effect in Europe was immediate. The first pepper that arrived in Lisbon sold for 30 cruzados an arroba, the cruzado being about equal to the ducat, and the price later dropped to 20 cruzados.

Almost overnight Lisbon grew and expanded. The Rua Nova dos Mercadores became one of the busiest thoroughfares in Europe. Ships unloaded a ceaseless stream of exotic goods: spices, pearls and precious

stones, sandalwood, honey, wax, silks, Persian carpets, furniture, perfumes, embroideries, cottons, and a constant supply of drugs. "Goods flowed to Lisbon from almost every country in Europe: woollens and velvets; caps and kerchiefs; Flemish clocks and watches; Portuguese
2 and Spanish wines; mirrors and crystal and glassware; jewellery, curiosities and pictures; coins and gold and silver; swords and daggers, their hilts curiously carved, arquebuses and other instruments of war; knives and scissors; metals and metal goods of copper, iron and lead; musical instruments; ornaments of all kinds; dried fruits, cheese, vinegar, and a host of articles. And Portuguese ships carried them all to Asia!"[3]

Chinese Velvets

PLATE I

View of Macao from the Outer Harbour, about 1655, from an engraving by J. Nieuhoff. The Chater Collection.

For the Portuguese, Malacca had an importance other than the control of the pepper trade: it opened the way to countries farther east. In the progressive reign of the Yung-lo Emperor (1403–24) Chinese junks travelled to India, and as far west as the Somali coast, but later in the century the limits of their overseas trade were restricted by the revival of the ancient policy that no Chinese ship should go outside the coastal waters. A few junks continued to make the annual trip to Malacca, and the first direct contact between Portuguese and Chinese was in 1509 when Diogo Lopes de Sequeira visited the town. When Alboquerque attacked and captured it, Chinese junks were again in port. He lost no time in establishing friendly relations, and at his request one of the junks carried an envoy to Siam. Two years later, in 1513, we have the first recorded visit of a Portuguese to China: Jorge Alvares apparently accompanied the Chinese merchants on their return journey, and combined the trip with a most successful trading venture.[4]

The next and logical step in establishing commercial relations with this eastern empire was to despatch an embassy to the Chinese court. In 1517 Tomé Pires, a man well qualified, was selected for the office, and sailed in a squadron of eight ships commanded by Fernão Peres de Andrade. Despite propitious beginnings, the embassy was a failure, the result of the first of the misunderstandings that have marked the relations of China and the West. Some of the company were executed, and the rest, including Pires himself, died in captivity. One of the results of the failure was an edict proscribing all trade between the Chinese and the foreigners. Although this ban on trade closed Canton, the major market centre of South China, to the Portuguese, it did not end their commercial ventures in the country. An illicit trade continued, carried on from the islands off the coast of Fukien and Chekiang. With the Portuguese discovery of Japan in 1542, and the realization that a profitable market existed in the Island Kingdom, particularly for Chinese silk goods, the need for a permanent factory on the Chinese coast became imperative. Shortly after 1550, friendly relations were re-established with the officials of Kwangtung province by Lionel de Sousa, resulting in the foundation by 1557 of Macao, *Cidade do Nome de Deos na China*[5] (Pl. I).

During the Ming Dynasty the coasts of China were ravaged by Japanese pirates, and the raids of the Wako or "robber-slaves," as they were known, were feared from the Liaotung Peninsula in the north to Hainan in the south, and sometimes as far inland as Nanking.[6] In a step to prevent their depredations, all trade with Japan was interdicted under

pain of death. A limited trade appears to have been carried on by way of the Ryukyu Islands, but was inadequate to supply the Japanese market. With the establishment of a base of operations on the Chinese coast, the stage was set for the most prosperous era of Portuguese Far

Eastern trade. Controlling the Spice Islands, the Portuguese could exchange pepper, the most desired commodity in the China trade, for silk goods. These were sold profitably in Japan for silver, for which there was a constant demand in China. This trade remained profitable until the adoption of the *Sakofu* or "closed-country" policy by the Tokugawa Shogunate in 1636, and the formal expulsion of the Portuguese from Japan in 1639.

To the east of the Spice Islands lies the archipelago now known as the Philippines, which in the earlier part of the sixteenth century was known to the Portuguese as the Eastern Isles (*Las Islas de Oriente*), and to the Spaniards as the Western Isles (*Las Islas de Poniente*). They had been discovered by Magellan in 1521, and it was here that he met his death. Although the line of demarcation established by the Treaty of Zaragosa in 1529 placed the whole archipelago well within the Portuguese zone of influence, geographical knowledge was uncertain, and Spain coveted her neighbour's monopoly in the Far East. Two attempts were made to occupy the islands; the first, in 1542, was a failure, but the second, under the command of Miguel Lopez de Legaspi, succeeded. In 1565, the first European settlement was established on Çebu, and in 1571 Manila was founded. This soon became the main centre of Spanish trade in the Far East, and Chinese junks arrived annually with silks, porcelains, and other goods, which were bought with silver from New Spain.

The Spaniards' first important contact with China followed the attack on Manila by the Cantonese adventurer Lin (Ah) Feng, known to the Spaniards as Limahon. After being twice repulsed, the pirate sailed to Pangasinan where he established himself, and was blockaded by a force under the command of Juan de Salcedo at the end of March, 1575. A few weeks later, an Imperial war-junk, under the command of the Pa-tsung (coastguard garrison commander), Wang Wang-kao, arrived off the Philippines searching for Limahon. After meetings with the Spanish officials during which the Governor-General, Guido de Lavezares, promised to hand over the pirate, dead or alive, to the Chinese authorities, Wang undertook to carry back a small party of Spaniards led by Fr. Martín de Rada, O.E.S.A. The party was only in China for a little over two months, but, although their movements were restricted, de Rada assembled considerable information about the country, and made a collection of Chinese books.[7]

One of the results of this visit was the decision of Philip II to send an embassy to the Wan-li Emperor. Fr. Juan González de Mendoza,

O.E.S.A., and two other friars were nominated as ambassadors, and sailed for Mexico in 1580. In Mexico, the Viceroy, at first favourable to the project, was advised by the Governor of the Philippines, Dr. de Sande, that the project was a waste of time and money. On his recommendation the embassy was abandoned, and Mendoza returned to Spain.[8] While in Mexico he had spent his time collecting information about China, and on his return he assembled the information he had collected in his famous *Historia*, a book mainly based on the work of earlier writers. It was first published in Rome in 1585, and proved to be one of the "best-sellers" of the sixteenth century. It was quickly translated into the principal European languages, and had run to thirty editions by 1600. It presented to Europe the first comprehensive account of China since the works of Marco Polo.[9]

Just before this an event occurred which had a disastrous effect on the Portuguese Empire. In the thirteenth century the Moors had been driven from Portugal, but their presence in Spain, until the capture of Granada in 1492, and their proximity in North Africa remained a constant threat, and nourished the crusading spirit of the country. This spirit had its final, though tragic, flowering in the expedition which Sebastião I (1557–78), led to utter defeat at Al Kasr al Kebir in Morocco. With his death, his uncle, the aged and feeble Cardinal Dom Henrique, ascended the throne: the last member of the House of Aviz, under whose rule Portugal had seen her greatest glories. When he died in 1580, the throne was vacant. Of the several claimants, Philip II of Spain was the most powerful. He was welcomed by the pro-Spanish Party he had built up, and united the two crowns in his own person. Legally, the two kingdoms were separate, but in actual practice the power of Portugal was used by Philip to strengthen the Spanish forces in his conflicts with his Protestant enemies. Men, ships, and armaments that should have been used to protect the Eastern Empire were expended in the Great Armada. Forts and factories in the Far East were left undermanned and unprovisioned, and became natural targets for attack by the English and the Dutch, the inveterate enemies of Spain. That any of the Portuguese possessions survived the "sixty years captivity" is to the credit of the local inhabitants. By 1640, when João IV of Bragança ascended the throne, Portugal had lost her pre-eminence in the Far East, and England and Holland were the ascendant powers.

Any account of European contacts in Asia, however brief, would be incomplete without a mention of the missionary ardour that pervaded all undertakings: a missionary ardour that combined with commercial enterprise to the mutual benefit of all concerned. Many who laboured hard and unremittingly are virtually forgotten, but a few are remembered through their writings. Among those are Fr. Gaspar da Cruz, O.P., whose *Tractado* was the first book devoted solely to China printed

in Europe,[10] and two men of outstanding ability, Fr. Martín de Rada, O.E.S.A., whose visit to China in 1575 has already been mentioned, and Fr. Matteo Ricci, S.J., who entered the country in 1582 as a member of the first Jesuit Mission, and whose success is well known.

The demand for spices, particularly pepper, was as great in China as in Europe, and it was from this source that the greatest profits were obtained. There was a limited demand for certain other products, particularly a few European articles which had a novelty appeal. Clocks, mirrors, ornaments of glass and crystal, and Portuguese and Spanish wines were among the curiosities for which there was a sale, as well as two textile products of European manufacture which were unknown in China at that time: fine woollen cloths (such as camlets), and velvet.

During the period of the early contacts, references to China are found in the writings of a number of men, all based on reports they had heard from others who had visited the country. Tomé Pires and Duarte Barbosa both wrote treatises on the commercial aspects of the Portuguese Empire, and each has a short notice on the China trade. Pires' *Suma Oriental* was written before he sailed as ambassador in 1517, and Barbosa's *Book* before he joined Magellan's company in 1519. Short descriptions of the country are also found in the works of the chroniclers of the time, although these deal primarily with the rise of Portuguese power in the East.[11] Mention is made of the products that could be obtained in China by some of these writers, and silk and silk goods are naturally the first consideration. Pires mentions "raw silk in great quantities" and certain woven goods,[12] but *The Book of Duarte Barbosa* is more specific. "Very good silk is produced here from which they make great store of damask cloths in colours, satins and other smooth cloths, also brocades."[13] The Portuguese chroniclers give less information; João de Barros gives no list of products of the country, and Damião de Góis only mentions straight garments of silk, brocades, cottons and fur goods. The work of Fernão Lopes de Castenheda, who went to India in 1528, after Canton had been closed to foreign trade, was the first of these short descriptions to appear in print, and does contain a list of the goods available there. Like Pires and Barbosa, he states that a great quantity of silk is produced, but gives a list of the woven goods that were obtainable which differs from theirs: damasks, satins, velvets, taffetas, brocades, and light patterned silks.[14]

This mention of velvet, and a later one which possibly derives from this source, are the only instances where it is mentioned as a product of China until we have a definite statement in 1592 that it was then being woven there. It is essential to remember two things: Lopes de Castenheda was not himself engaged in the China trade, and even more important the illicit nature of the ventures there during the time of his residence in the East may have meant that accurate information was not

readily available during this period. It would be only natural for a European to assume that velvet would be woven where large quantities of silk were available.

The first mention of trade in velvet is found in a letter written by
10 Giovanni da Empoli, a Florentine in Portuguese employ. This letter, which was written from Cochin November 15, 1515, and received in Lisbon October 22, 1516, opens with news of ships coming from Malacca, and that Portuguese have been to China. After a short description of the country, he goes on to say: "The Country abounds with all fine white silk, and it costs thirty cruzados the cantaro; damasks of sixteen good pieces, at five hundred reals the piece; satins, brocades, musk at half a ducat an ounce, or less. Many pearls of all sorts in great abundance; and many caps, so that from there to here there is made a profit of thirty to one. There come from there amazing things; and to tell the truth, I recount nothing to you of what is there. The ships carry spices from here; so that each year there goes there from Sumatra some sixty thousand cantaros of pepper; and from Cochin and the land of Malibar fifteen to twenty thousand cantaros of pure pepper: it is worth fifteen or even twenty cruzados the cantaro. In like manner ginger, mace, nutmeg, aloes, velvet, our gold thread, coral, woollen cloths, robes."[15]

At the time the letter was written da Empoli had not visited China, but hoped to engage in trade there. There seems no reason to question the information that he surely obtained from other traders who had done so. This early mention of trade in velvet is of the utmost interest, and can only be explained by the fact that the material was not being produced in China. It would be a waste of valuable cargo space to transport it from Europe in the hope of competing with Chinese manufacture.

A second letter mentioning the country was written by another Florentine, Andrea Corsali, to Lorenzo de Medici, and is dated January 6, 1515/6. In it he writes, "The merchants of the land of China also make voyages to Malacca across the Great Gulf to get cargoes of spices, and bring from their own country musk, rhubarb, pearls, tin, porcelain, and silk and wrough stuffs of all kinds, such as damasks, satins, and brocades of extraordinary richness." Although he goes on to say that the Portuguese had already made a profitable trip to China and "had sold their goods at a great gain," he unfortunately mentions no other goods than spices as being part of the cargo.[16] His statement regarding the silk goods produced agrees with the other commercial writers, and in the works of none of these is velvet mentioned as available in China.

The survivors of Tomé Pires' unsuccessful embassy were imprisoned in Canton, and letters from two of them reached Europe. Both were

apparently written in 1524, and that of Vasco Calvo contains recommendations for presents that would be acceptable should another embassy be contemplated. In addition to large mirrors, coral, and sandalwood, he specifically mentions camlets and velvets.[17]

No actual records of trade seem to have survived from any part of the sixteenth century. Many undoubtedly perished with the destruction of *Las Casa de las Indias* in Lisbon in the great earthquake of 1755. That none survive from the closing of Canton in 1520 to the re-establishment of friendly relations some thirty years later, is not surprising, as it is quite probable that few formal records were kept, in view of the unofficial nature of the ventures. We have one record of a visit to China during this time: a record that is not altogether reliable, and that was written by a confessed adventurer for the entertainment of his family and friends many years after the events described. The author was Fernão Mendes Pinto, and his work *Perigrinaçam*. It is an amazing mixture of fact and fancy, but there is probably at least a grain of truth in most of the exploits he describes. Unreliable as he is as a witness, his description of his meeting with the Mandarin of "Nonday," probably in 1541, has interest here, and is probably not entirely a figment of his imagination. He says that the Chinese leader "was mounted on a good horse, with certain cuirasses of red velvet with gilt studs of ancient date, which we afterwards learned belonged to one Tomé Pires whom the king Dom Manoel of glorious memory sent as ambassador to China."[18]

With the accidental discovery of Japan in 1542 by three Portuguese deserters who were shipwrecked there, the greatest era of Far Eastern trade begins. Chinese silks were the staple commodity, but there was also an inordinate demand for geegaws and novelties of which velvet was one. In a letter written in 1569, Father Luis Frois, S.J., describes his historic meeting with Oda Nobunaga, and gives a glimpse of the interest in imported novelties. In mentioning Nobunaga's immense personal fortune, Frois writes:

> "As soon as the nobles, bonzes, citizens and merchants who had dealings with him, realized that Nobunaga wanted dresses and objects from India and Portugal, truly such an amazing amount of material was presented to him, that I was left quite astounded and beside myself. For I could not imagine whence came such a great variety of goods to these so distant regions, nor how the Japanese could have got them from the Portuguese, namely all the scarlet capes and *cabaias* (Malay "shifts"), velvet caps with their feathers and medallions of Our Lady of Grace, many pieces of crimson satin, Cordova leather skins, hour-glasses and sundials, candlesticks and tapers, Chinese furred robes and furbelows, the finest glassware, every kind of rich damask, and many other different

kinds of things which I do not remember. All this in such abundance, that he has twelve or fifteen chests, like those of Portugal, filled with these things during the last three or four months, so that I cannot for the life of me imagine what can be brought thence that will be a novelty to him."

As Professor Boxer says, "some of these Chinese silks and furbelows were probably a by-product of the piratical raids of Wako, but Frois was doubtless correct in supposing that the greater part of this material, whether European or Asiatic, was brought by the Kurofune or Black Ship," the annual Portuguese trading vessel from Macao.[19]

According to Japanese tradition, velvet was totally unknown in the country before the arrival of the Portuguese, and the velvet caps with feathers and medallions are undoubtedly an example of European goods imported to meet the Japanese desire for new things. We know that the material was in demand for collars, and probably for other incidentals of dress, as well as for furnishings. In Japan, the origin of *birodo*, the word for velvet, is accepted as the Portuguese *velludo*. The tradition is that the Japanese were extremely anxious to know how it was made, but that the secret was not given away. It was not until after the formal expulsion of the Portuguese in 1639, that a roll of the material, undoubtedly from China, was found with one or more of the wires still in place, and Japanese weavers were able to discover the secret.[20]

That velvet was not known in Japan before the arrival of the Portuguese seems incredible if it had been woven in China. From an early period, there had been a constant demand in Japan for Chinese goods, a demand the Portuguese were able to take advantage of in the sixteenth century in their capacity of middlemen. Even in this period during which trade between the two countries was banned, a certain amount of Chinese luxury goods must have reached Japan as a by-product of the ravages of the Wako.

Following the re-establishment of friendly Sino-Portuguese relations by Lionel de Sousa shortly after 1550, which resulted in the founding of Macao as a permanent factory, relations with the Chinese officials of Kwangtung province became more stable, but the Portuguese tenure of the port was not absolutely secure. It appears that a present, euphemistically called ground-rent, was given to incoming Chinese officials, but, as the local Portuguese government had never officially been recognized, their rights and privileges were sometimes questioned. These incidents came to a head in 1582 when the new Viceroy of Kwangtung and Kwangsi peremptorily ordered the Captain-Major, the Chief-Judge and the Bishop of Macao to appear before him. Apprehensive of what might happen they were unwilling to go, but finally the aged and experienced Judge, Matthias Penella, accompanied by Father Miguel Ruggiero, S.J.

with perhaps another colleague, proceeded to Chao-ch'ing-fu where the Viceroy was in residence. Charging the Portuguese with the unauthorized use of laws other than those of China, the Viceroy threatened to deprive them of their trading privileges, and to expel them from the country. He was mollified by a timely distribution of gifts to himself, and to members of his retinue, and his attitude changed overnight: the cost being four thousand cruzados worth of velvets, mirrors, camlets, crystals and other European goods. The delegation was then dismissed after being informed that they could continue to inhabit Macao, subject to the laws of the Empire.[21] The inclusion of velvet in the bribe shows that at this time it was still a highly prized commodity, and its use for such a purpose would seem strange if it were already produced in China. The material presented on this occasion was undoubtedly of European manufacture.

About this same time, Mendoza was writing his *Historia* which, by his own admission, was based on the works of other people, and on information he obtained from men who had visited China. Two of his main sources were the *Tractado* of Father Gaspar da Cruz, and Father Martín de Rada's account of his visit in 1575, but he also had access to some private papers of de Rada's which he was permitted to use. In listing the products of the country, he writes:

> "They do make great store of silke, and excellent good, and give it verie perfite colours, which dooth exceed very much the silke of Granada, and is one of the greatest trades that is in all that kingdom.
>
> The veluets, damaskes, sattens, and other sorts of webs, which is there made, is all of so small a price, that it is a wonder to speake it, in especiall unto them that doo know how their prises be in Spaine and Italie."

A bit later, describing the dress of the Chinese, he mentions "shoes and buskins of veluet, verie curious," and says that "the poore folkes doo apparell themselves in veluet, vnshorne veluet and serge."[22]

None of this is derived from either of his two main sources, as neither of them gives detailed information regarding the materials available. Mention is made by da Cruz of damasks and taffetas "so rich that they bring them not to us," and de Rada only mentions damask, as a rule embroidered, in describing the dress of the Chinese.[23] Another source must be sought for Mendoza's statements, and it is just possible that some of his information may have been derived from Lopes de Castenheda's chronicle which has already been mentioned. The shoes and buskins of velvet are indeed curious unless they were made of imported velvet, or of felt which was mistaken for the richer material. The clothing of the poor

is even more curious, as velvet, once it was produced in China, was naturally more expensive than plainer silks.

In assessing, and attaching weight to Mendoza's evidence, two things must be borne in mind: he was not primarily interested in trade, and he, himself, was never closer to China than Mexico. His book was a popular account of a mighty empire, and not a dry factual report such as we have from those whose main interest was mercantile. In view of this, I feel we must disallow his evidence, as well as Lopes de Castenheda's that velvet was produced in China at this time when his statements are not supported by the testimony of other writers, and, as we shall see, are contradicted by other definitive evidence.

It was twenty years prior to the publication of Mendoza's work that the Spanish occupied the Philippines.[24] Early in 1565, shortly after the first settlement, the Governor, Miguel Lopes de Legaspi, forwarded to New Spain a memorandum of supplies and munitions that were required in the new colony. Included in the list are two pieces of crimson velvet for barter, showing that the material was in demand even in the islands off the main trade routes. The account written by de Rada following his short visit to China has already been mentioned, but more definite evidence regarding velvet resulted from Limahon's attack on Manila. A full report of the meeting between Wang Wang-kao and the Governor-General, Guido de Lavazeres, was sent to Spain in 1576 by his successor, Francisco de Sande. It covers many aspects of possible relations between the two countries, and Item 52 is of importance here. Dr. de Sande writes "No sheep are found along the coast (of China) but there are said to be some inland. On my asking them what Castillian products were lacking in their country they replied 'None whatever, unless it be velvet'; and they say that they do not have this, because they do not know how to make it, but if they could see that manufacture, they would learn it."[25]

This report is confirmed by John Huyghen van Linschoten, a Dutchman born in 1563. At the age of sixteen he went to Spain, and in 1583 sailed with the Portuguese East India Fleet to Goa. After spending six years in the east, he returned to his native land, and produced his *Navigatio ac itinerarium*, a compilation partly based on his own experiences, and partly on those of other traders with whom he came in contact. His report is a fund of information, and the maps he acquired during his residence in Goa, and published in his book, were of the greatest value to the Dutch, and to the English, in their expeditions to the East. After mentioning the great amount of silk produced in China, and listing the materials woven, he goes on to say: "Their apparell (as I said before) is most of Silke of all colours, that is such as are of wealth, and indifferent rich, others and such as are poore, do weare apparel of Cotton-linen, and of blacke and coloured Sayes and such like stuffe:

Cloth made of Wooll nor Velvet they cannot make in all China, although there wanteth not wooll, and they have many shéepe: notwithstanding, they know not how to use it, and wonder much at it when the Portingalles bring it thether." He goes on to say "The marchandises that the Portingals carrie to China, whereof they make most profite is Ryals of eight, which in China are worth above six testones, not for that they had rather have it then other Silver, but for that it is all Silver, for it is presently cut in péeces, to pay it out after their manner as it is shewed before, they carrie likewise some Wines both Portingal and Indian Wine, and some Oyle of Olives, which are their desire. Velvet, Cloth of Scarlet, whereof they have none, nor yet can they make any although they have both shéepe and wooll enough. Looking glasses, Ivorie bones, and all kinde of Christall and Glasse, are well solde there."[26]

Almost immediately after this we have our first proof of velvet weaving in China. Father Matteo Ricci, S.J., went there as a member of the first Jesuit mission in 1582. In a letter written to his father from Shaochou November 15, 1592, he informs him that "in the last few years they have been making velvet in this place and are now doing it very well."[27]

Sufficient literary evidence is available to show that there was a demand for velvet in the Far East, and that it was not one of the silk goods produced there.[28] On the strength of this, supported by Ricci's letter, and the reports of de Sande and van Linchoten, I have no hesitation in stating that velvet was not woven in China until about the end of the sixteenth century: probably in the decade preceding 1592. Once established, the manufacture appears to have developed rapidly, and in the beginning of the seventeenth century sufficient was being produced to be exported. Antonio da Morga in his *Sucesos de la Islas Filippinas*, published in Mexico in 1609, lists plain velvets, and some embroidered with gold being brought by Chinese junks for sale in Manila.[29] John Saris, writing from Japan in the second decade of the century mentions junks arriving from China carrying, among other things, velvets in all colours, and velvet hangings embroidered with gold.[30]

Later in the century a reference to export of Chinese goods is found in a description of trade in Russia written by Johann Phillipp Kilburger who was in the country in 1673–74. He mentions velvet (*Sammet*) from Persia, and plush (*Plüsch*) in various colours from China. Technically the construction and manufacture of both fabrics is the same, but the latter has a higher, loftier pile. Figured velvets were being produced in Persia at this time, and it seems probable that Kilburger used the term plush to distinguish the unpatterned, solid cut velvets from China.[31]

Through a technical study of Chinese velvets, it is possible to establish the source of the influence that inspired their manufacture. Bearing in mind the records of Sino-Portuguese trade, one would naturally expect this source to be Portuguese, but, as there appears to be no

record of velvet weaving in that country before the nineteenth century, it is necessary to look farther afield. As late as about 1600, Spanish velvet is shown in a list of trade goods carried from Goa to Macao,[32] and an investigation of early Chinese pieces confirms a Spanish source for the
16 inspiration. Examination shows the use of two foundation fabrics in the early seventeenth century. One is a modified 3/1 twill which was used in various countries throughout Europe, including Spain, and the other is a weave derived from the same twill which is peculiar to that country.[33] The second of these is found in the foundation fabric of the Ming dragon robe described below, which is probably one of the earliest Chinese velvets known. The other was used from the seventeenth century through to modern times, and is found in numerous examples.

Chinese Velvets

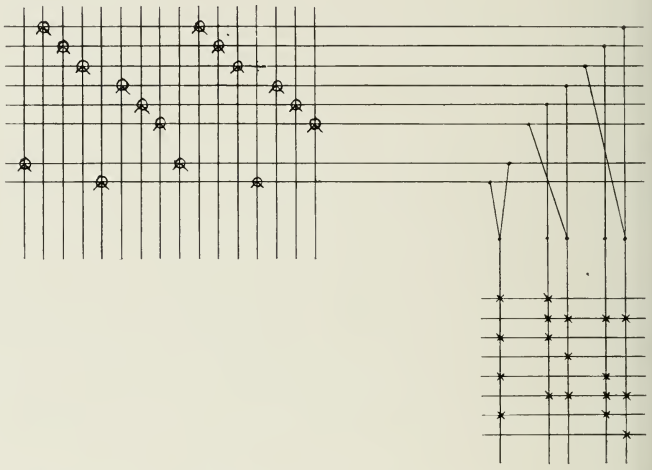
Silk velvet weaving is one of the high achievements of the weaver's art, requiring specialized equipment, and highly skilled artisans. In principle, a secondary warp is used to produce a pile above a foundation fabric. This warp is first raised above the main warp so that a small rod may be inserted, and then lowered to hold the rod in place. The pile warp may then be left to float on the back of the fabric until another rod is inserted producing a loose-pile velvet, or may, as in all the Chinese examples studied, be interwoven with the ground to produce a fast-pile velvet. Once the rod is securely held in position, it may either be pulled out, or cut out: the first method producing an uncut pile, the second a cut pile. To weave simple velvets, a loom must be fitted with an extra beam to hold the pile warp, and an extra harness to control it. In weaving figured velvets, a figure harness is employed to control the pile ends as required by the pattern, and, as the take-up of these ends is uneven, the extra beam must be replaced by a bobbin-rack with each spool separately tensioned, and each carrying the end or ends for one warp découpure of the pattern. If extra wefts are employed to decorate the voided ground, not only is a second figure harness usually required to control the main warp, but also a binder warp must generally be used to tie these pattern threads. This warp is usually wound on a separate beam, and is controlled by a separate harness. Velvets simultaneously employing more than one colour of warp are woven with equipment similar to that used for voided velvets, with separate spools for each colour.[34]

How the Chinese learned the basic principles of this art cannot be determined. Two possible alternatives are open: the secret may have been given away by a European who had sufficient knowledge of the technique, or it was discovered by the Chinese through experimentation based on a study of imported examples. However it was learned, the secret was mastered to give a range of solid cut, solid ciselé, uncut voided, and cut voided velvets, the last of these often with weft-patterned, or brocaded grounds. As one would expect, the earliest examples are simple velvets, but the principle of the bobbin-rack seems to have been mastered in a comparatively short time, and to have been in use by the middle of the seventeenth century. Even at this date it appears to have been employed to weave material for carpets and hangings where the voided ground is richly decorated with extra wefts or metal thread, usually a gilded paper lame, and coloured silks tied by a binder warp which always binds in tabby.

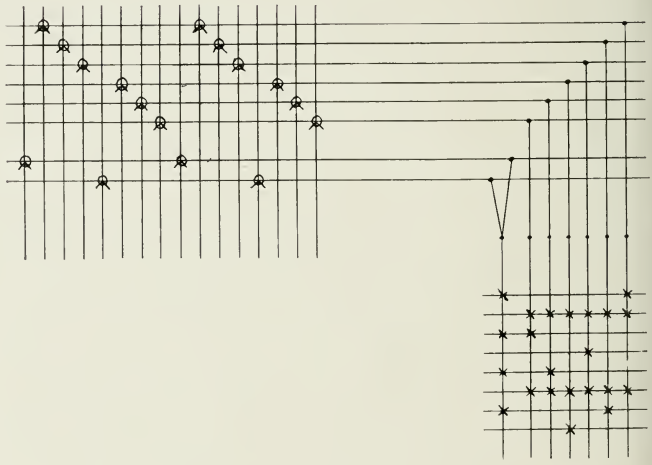
Variations of the two constructions, 3/1 and 5/1 twill, were used

for foundation fabrics in China: the former, as has already been mentioned, in a derived or a modified form, the latter as a broken twill. The weave derived from 3/1 twill (Fig. 3), undoubtedly of Spanish origin, has been found in only one example, the Ming dragon robe described below. It seems probable that it was in use for a very short period, and had been abandoned before the end of the Ming dynasty in 1644. The modified 3/1 twill (Fig. 13), repeating on one and two picks, has a longer history, and has been used, first for solid, and later for voided materials, throughout the entire period of velvet production in China.

The earliest voided velvets with unpatterned grounds that have been examined date from the second half of the seventeenth century, and appear to be contemporary with the weft-patterned voided velvets mentioned above. It is in these that the 5/1 broken twill is found. The



Weave derived from 3/1 twill.
See Fig. 3.



5/1 broken twill weave.
See Fig. 9.

Fig. 1. Entering plans and tie-ups for six shaft velvet weaves.

weave produces a satin effect and occurs in various forms, the earliest being a 6-end irregular satin. As the weave derived from 3/1 twill produced a less suitable ground for voided velvets, it seems most probable that it was abandoned in favour of this newer construction when the principle of the bobbin-rack was discovered. Both foundation fabrics could be woven with the same threading on six shafts with a change in the tie-up of the treadles (Fig. 1). As a velvet weave, these 5/1 twills occur only in China, and are found in pieces woven as late as the present century. Most of the examples are in Chinese style, the material being mainly for clothing, but a few pieces exist with designs showing European influences. These were apparently woven for export in the late eighteenth and early nineteenth centuries.

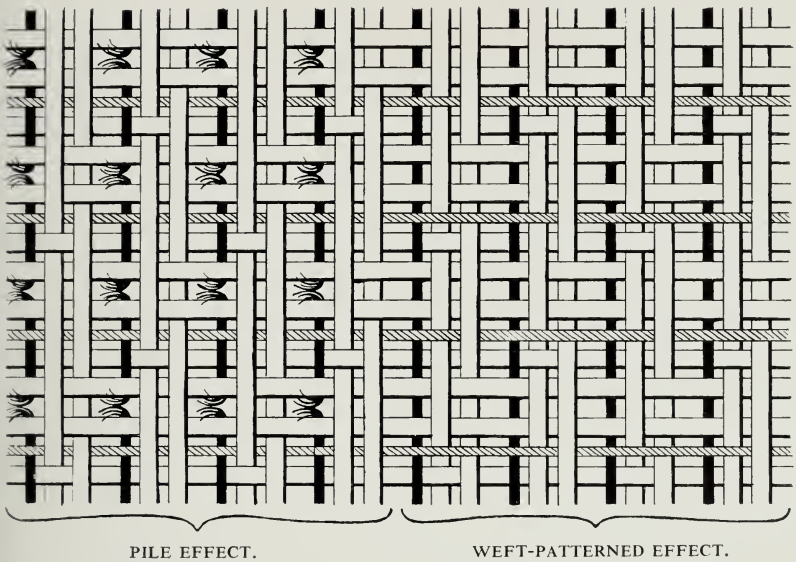


Fig. 2. Modified 3/1 twill with pattern weft.

One major type of velvet produced in the nineteenth century, in which the voided ground is weft-patterned with metal thread, is not described in the analyses. It was used for chairbacks, hangings, and decorative panels. It employs a simpler construction than the pieces with a number of extra wefts as no binder warp is required. In the voided areas the pattern thread is tied on the face by ends of the main warp and in the pile sections lies between the main warp and the pile warp. The construction is shown in Fig. 2. One piece probably from the eighteenth century woven in this way is in the Victoria and Albert Museum, London.[35]

Chinese velvets have certain characteristics in addition to the weaves used for the foundation fabrics. All are woven with a weft proportion of three picks to one rod, and the pile warp is always raised over the second pick of each series, to produce a fast-pile velvet. In none of the pieces examined has undyed silk been used, the yarns of the foundation fabric being usually, but not always, similar in colour to the pile.

The detail that distinguishes Chinese velvets from those produced elsewhere in the world, except for some examples from Japan, is the construction of the selvage. In this, the outer ends are always double-woven to produce a narrow tubular fabric and it should be pointed out that this peculiarity is also found on other types of Chinese material, such as damasks. In the weaves based on 3/1 twill, the inner ends of the selvage are woven in a modified 2/2 twill, repeating on one and two picks, giving the appearance of a 3/3 twill repeating on four ends; with 5/1 twill grounds, the inner part is woven in 4/2 twill, repeating on six ends. With one exception, described below where the inner part is woven in a 5/1 twill, these constructions have been constant in the selvages examined. Variations occur in Japanese velvets, but, here as well, the tubular edge is sometimes found.

From the construction of the selvage, another peculiarity may be discovered. Two shuttles were employed in weaving the foundation fabrics; the two picks preceding a velvet rod were woven with one, and the pick following the rod with the other. In many pieces, particularly those of better quality, identical yarn was used in both shuttles, but in other pieces dating from the late nineteenth and early twentieth centuries, a rather coarse cotton yarn, usually black, was used in the second shuttle. This use of coarse yarn spaces the tufts of pile farther apart, and automatically produces a poorer product. Another interesting point about this second shuttle is that the yarn it carries is not involved in weaving the tubular edge of the selvage, but only in the inner section woven in twill. These details of selvage construction may be studied in Figs. 8, 10 and 14.

Considering that velvet is a luxury item, the number of centres in which it was produced must always have been limited. Such information as we have dates from the nineteenth century. Isidore Hedde was sent to China in 1843 by members of the French silk trade, and spent three years investigating Chinese sericulture and silk manufacture. After his return, an exhibition of objects he had acquired was held at St. Étienne in 1848, and a detailed catalogue prepared. Two of the items described are velvet; one, a solid ciselé, was woven at Nanking, the other, a group of two-colour pieces in green and poppy red, were from Chang-chou-fu.[36] In 1878, Natalis Rondot, representing the Chamber of Commerce at Lyon, addressed an inquiry to the Inspector General of Customs at Peking for information regarding silk production. In response to his

request a full report was prepared and a collection of samples made, which were forwarded to France. The report was published in 1881, and references are found to velvet weaving in Nanking, Hang-chou, Su-chou, Chang-chou and Ningpo.[37] It is interesting to note that both Nanking and Su-chou had establishments where silk was woven for the Imperial Court, and mention is also made of velvet being woven at Chang-chou for court use.

A set of the samples collected was deposited in the Musée Historique des Tissus, Lyon, in 1882. With the outbreak of war in 1939, it was placed in storage, and it has not yet been possible to unpack it. When it is again available for study, it may be possible to establish centres of production for certain types of Chinese velvets. The lists of samples in the Maritime Customs report give only the briefest descriptions, but figured velvet is shown as coming from Nanking, and samples woven of silk and cotton from Su-chou.[38]

It is naturally in the simple velvets that we must look for the earliest examples. Unless these have an intact selvage or can be distinguished by some means of decoration, it is difficult to know which are Chinese. Undoubted examples are two pieces of solid cut velvet, both embroidered: one with purely Chinese motives, the other showing European influence. The first is now an altar frontal in Sweden, and was presented to Gottröra Church in 1705. Decorated with auspicious symbols, it is in Ming style, and must date from the first half of the seventeenth century.[39] In this piece, it is interesting to note that the silk carried by the second shuttle, for the pick following the velvet rod, appears to be of slightly finer grist than that used for the two picks preceding the rod. The other is a large panel in the Victoria and Albert Museum, decorated with gold filé, (Pl. II).[40] It may easily have been made for the Portuguese market, and is representative of a type of work that was also in demand in Japan in the first quarter of the seventeenth century.[41] Solid cut velvet of later date is often found as a decorative edging on Chinese armour. The foundation fabric of all these is woven in a modified 3/1 twill (Fig. 13, page 61).

The solid ciselé pieces produced in the Far East require special comment. The patterning was not, as one would naturally assume, loom controlled. They were woven as simple uncut velvets, and the velvet rods were left in place until the length was completed. The required design was then pounced, painted, or stamped on the uncut pile, but now the method used cannot always be determined. The velvet rods were cut by hand, probably with a sharp knife, as required by the pattern, leaving a design in uncut pile reserved on a cut pile ground. In support of this statement, it should be noted that in all these pieces the back of the material presents the appearance of a simple velvet: the loops of pile, whether cut or uncut, follow exactly on the same line

PLATE II

Red velvet panel embroidered with gold filé. Sino-Portuguese. Seventeenth century, first quarter. The Victoria and Albert Museum, London. T.36-1911. Reproduced by permission.

PLATE III

Velvet picture, painted and partly cut with some of the round velvet rods still in place. Japanese. ca. *1880. The Victoria and Albert Museum, London. T.1713–1888. Reproduced by permission.*

without the slightest deviation. Above all, the various repeating motifs, where they occur, vary slightly from one another both in their position and their details, despite the skill shown in the regularity of the repeats. In other words, the repeats vary in such a manner that they could not have been mechanically controlled by the loom.

Examples of velvet patterned by this method in the Far East are known as late as the nineteenth and early twentieth centuries. The piece of black velvet which Hedde obtained from Nanking between 1843–46 is described in his catalogue as being decorated in this way.[42] On his return to France, a length was woven there, and the process duplicated. No suggestion is made in this account of how the pattern was marked on the uncut pile. On a fragment of black Japanese velvet of about the same date, decorated with a repeating sprig design, traces of brush marks in white can still be seen outlining the motives. This sample is in a swatch-book in The Victoria and Albert Museum.[43] A number of hangings and panels, with patterns in cut and uncut pile, are in the collections of The Royal Ontario Museum, Toronto. Most of them date from the latter part of the Ch'ing dynasty and vary considerably in quality. On a number, the remains of a stamped outline, possibly made by a heated metal die, can still be observed. This outline was used as a guide in cutting.

An extension of the technique was employed in Japan in the late nineteenth and early twentieth centuries. A landscape or other scene was first painted on the uncut pile, and the details of the picture heightened by judicious cutting. Plate III shows an example in The Victoria and Albert Museum, painted and partly cut, with the original round velvet rods still in place.

With one exception, other types of Chinese velvets require little special comment, and any points of special interest will be covered in the analyses appended to this paper. The exception is found in pieces with pile in two colours. What is probably an experimental piece was woven in Japan in the eighteenth century, and is in the Musée Historique des Tissus, Lyon. It is a solid velvet with a pattern in beige on a green ground, in cut pile on the face, and with the same pattern with colours reversed, in uncut pile on the back. The weaving of pile on both surfaces would obviate the necessity of using a bobbin rack, as the take-up of the ends would be even: both colours of the pile warp could be wound on a single beam.[44] A Chinese piece of voided two colour velvet from the late eighteenth century is in the Cooper Union Museum for the Arts of Decoration, New York. It has a European style pattern in green and yellow on a greenish ground, and was undoubtedly woven for export.[45] The other examples of Chinese two colour velvets studied are solid cut in green and poppy red of the type that Hedde acquired in Chang-chou.

The textiles that form the basis of this paper are part of the collec-

tions of The Royal Ontario Museum, and these have been supplemented by an examination of material elsewhere. The technical analysis was undertaken to discover the characteristics of Chinese velvets. It has shown that Spanish inspiration, through European contacts, was the beginning of the art in China, and has established certain structural differences which are valuable clues in establishing Far Eastern provenance. The use of 5/1 broken twill, the order in which the shuttles are used, and the construction of selvages, are typical of Chinese products. Even with the material studied, a chronological sequence of development has appeared: the early use, for a limited time, of the weave derived from 3/1 twill, and the development from it of the 5/1 twill grounds, first as irregular satin, and later as broken twills; the similar early use of the modified 3/1 twill, its longer history, and the development from it of richly patterned voided velvets for hangings and carpets. I have no doubt that this sequence will be confirmed when a larger volume of material has been analysed.

Notes

1. In the course of my investigations many people have assisted me with advice, encouragement, and co-operation. From the many who have done so, I would like particularly to express my gratitude to the following for their generous help: Prof. C. R. Boxer, Mr. G. F. Wingfield Digby, Dr. Agnes Geijer, Mr. Calvin Hathaway, M. Félix Guicherd, Senhora Maria José de Mendonça, Miss Pauline Simmons, and Mr. Kojiro Tomita.
2. A. Cortesão, *The Suma Oriental of Tomé Pires and The Book of Francisco Rodriguez* (Hakluyt Society. Ser. 2, Nos. 89, 90 (London: 1944)), II, 287.
3. José Maria Braga, *The Western Pioneers and Their Discovery of Hongkong* (Bulletin of Instituto Portugûes de Hongkong, No. 2 (Macao: 1949)), p. 15.
4. J. M. Braga, *The "Tamão" of the Portuguese Pioneers*, T'ien Hsia Monthly, VIII (1939), 420–32.
5. Braga, *The Western Pioneers . . .*, pp. 102–39.
6. For the Wako, cfr., C. R. Boxer, *The Christian Century in Japan, 1549–1650* (Berkeley and London: 1951), and *Fidalgos in the Far East, 1550–1770. Fact and Fancy in the History of Macao* (The Hague: 1948). In studying Portuguese relations in the Far East, the works of both Prof. Boxer and J. M. Braga can be recommended without reservation.
7. C. R. Boxer, *South China in the Sixteenth Century* (Hakluyt Society, Ser. 2, No. 106 (London: 1953)), pp. xxxvii ff. and lxvii ff.
8. Don Claudio Sanz Arimendi, Un capitulo para la historia de Felipe II (Relaciones entre España y China), *Actas y Memorias, Congresso de historia y geografia Hispano-Americanas, Seville, abril, 1914* (Madrid: 1914), pp. 449–72.
9. Juan Gonzalez de Mendoza, *Historia de las casos mas notables, ritos y costumbres del gran reyno de la China, sabidas assi por los libros de los mesmos Chinas, como por relacion de religiosos y otras personnas que en estado en el dicho reyno* (Rome: 1585).
   ———, *The History of the Great and Mighty Kingdom of China and the Situation Thereof*, trans. R. Parke, edited Sir G. T. Staunton (Hakluyt Society, Ser. 1, Nos. 14, 15 (London: 1853–54)).
10. Boxer, *South China . . .*, The Treatise of Fr. Gaspar da Cruz, O.P., pp. 44–239.
11. Fernão Lopes de Castenheda, *Os livros quarto & quĩto da historia descobrimento & coquista da India pelos Portuguezes* (Coimbra: 1553), Book IV, chaps. xxvii–xxxi; João de Barros, *Decada Terceira* (Lisbon: 1628), Book II, chaps. vii–viii; Damião de Góis, *Croníca do felícissimo Rei Dom Manoel* (Coimbra: 1955), Book IV, chap. xxv.
12. Cortesão, *op. cit.*, I. p. 93.

13. Cfr. M. L. Dames, *The Book of Duarte Barbosa* (Hakluyt Society, Ser. 2, Nos. 44 and 49 (London: 1918 and 1921)), II, 214. The Portuguese text was first published by The Royal Academy of Sciences at Lisbon in 1812. I have rendered the phrase "e outros panos razos," "other smooth cloths" rather than follow Dames Translation, "other cloths without nap."
14. de Góis, *op cit.*, p. 65; Lopes de Castenheda, *op cit.*, p. xxxvii.
15. *Archivio Storico Italiano,* Appendice, Vol. III (Florence: 1846), pp. 85–88. Henri Cordier, L'Arrivée des Portugais en Chine, *T'oung Pao*, Ser. 2, No. 12 (Leyden, 1911), pp. 513–14. In some references to this letter a certain confusion seems to have arisen regarding the phrase "le navi ortano do qua spezerie": "the ships carry spices from here," i.e., from Cochin. From the context there is no doubt that the spices and other goods were carried to China. I am most grateful to Miss B. M. Corrigan of The University of Toronto for clarifying this point.
16. Henry Yule, *Cathay and the Way Thither*, edited by Henri Cordier (Hakluyt Society, Ser. 2, Nos. 33, 37, 38, 41 (London: 1913–16)), I, 96.
17. Donald Ferguson, Letters from Portuguese Captives in Canton written in 1534 and 1536 (alias 1524), *The Indian Antiquary*, XXX, XXXI, (1901–2), XXXI, 64.
18. *Ibid.*, XXX, 441.
19. Boxer, *The Christian Century . . .*, pp. 95–96.
20. Yosuburo Takekoshi, *The Economic Aspects of the History of the Civilization of Japan* (London: 1930), I, 315.
21. T'ien-tse Chang, *Sino-Portuguese Trade from 1514–1644* (Leyden: 1934), pp. 98–99. Henri Bernard, S. J., *Aux Portes de la Chine* (Tientsin: 1933), p. 165. Montalto de Jesu, *Historic Macao* (Hongkong: 1902), p. 35.
22. Mendoba, trans. R. Parke, *op. cit.*, I, 14, I, 30, and I, 31. In the original edition of 1585, *op. cit.*, these passages are as follows:
    Page 8. el terciopelo, y damasco, y raso, y tafetan, y otras telas que se hazen.
    Page 22. çapatos de terciopelo muy curiosos.
    Page 23. Lo que visten es brocado, telas o sedas, que como hemos dicho, las ay muy buenas, y baratas y las muy pobres terciopelo raso, o sarga.
23. Boxer, *South China . . .*, pp. 112 and 126.
24. E. H. Blair and J. A. Robinson (eds.), *The Philippine Islands, 1493–1898* (Cleveland: 1903–5), II, 191.
25. Ibid., IV, 52.
26. *The Voyage of Jan Hughyen van Linschoten to the East Indies* (Hakluyt Society, Ser. 1, Nos. 70, 71 (London: 1885)) I, 136 and 150. See also I, 147–48.
27. Pasquale M. d'Elia, S.J., *Fonti Ricciane* (Rome: 1942–49), I, 20, note 7. Tacchi Venturi, *Opere Storiche del Matteo Ricci* (Macerata: 1913), II, 98.

28. Further evidence showing that velvet was not available in China can be quoted. This includes passages in Hakluyt's Voyages: Richard Hakluyt, *The Principle Voyages, Traffiques & Discoveries of the English Nation* (Hakluyt Society, Extra Series (Glasgow: 1914–15)); The Voyage of M. Caesar Fredericke (1563–81), V, 406: "Very great aboundance of fine silke clothe of damask and taffata"; The Taking of the *Madre de Dios* (1592), VII, 116: although numerous silks are listed as part of the cargo of this East Indian carrack bound for Lisbon, velvet is not mentioned. Cfr., also Blair and Robinson, *op cit.*, VIII, 78 ff.: Ordinance forbidding Indians to wear Chinese stuffs. See also Hakluyt, *op. cit.*, A voyage of three tall ships . . . performed by James Lancaster (1592), VI, 399, where velvet is listed as a commodity carried to the East Indies from Europe.
29. Antonio da Morga, *Sucesos de las Islas Filipinas* (Mexico: 1609), p. 161. In reading da Morga, it must be borne in mind that he was a strong advocate for continuing the Manila trade. A faction existed which strongly recommended abandoning it.
30. *The Voyage of John Saris to Japan, 1613,* edited by Sir Ernest M. Satowl, K.C.M.G. (Hakluyt Society, Ser. 2, No. 5 (London: 1900)), pp. 216 and 227.
31. Agnes Geijer, *Oriental Textiles in Sweden* (Copenhagen: 1951) pp. 26 and 93.
32. F. Colin and P. Pastells, S.J., *Labor Evangelica de los obreros de la Compañía de Jesús en las Islas Filipinas* (Barcelona: 1903–4), I, 220. The velvet is described as "terciopelo despaña." Immediately following the list of goods carried from Goa to Macao, is a description of goods available in Canton. No mention is made of velvet.
33. A paper establishing this as a ground used in Spain is being prepared for the *Bulletin of The Needle and Bobbin Club, Inc., of New York.*
34. For further technical information regarding velvets consult: Félix Guicherd, *Cours de Tissage* (Lyon, 1946), and William Watson, *Advanced Textile Design* (London: 1947).
35. No. T107–1912. Another example, also from the eighteenth century, is in the Philadelphia Museum of Art (No. 58.34.20). In both these pieces the foundation fabric is a 5/1 broken twill, not the modified 3/1 twill shown in Fig. 2.
36. Isidore Hedde, *Descriptions méthodiques des produits divers recueillés dans un voyage en Chine* (1843–1846) (St. Étienne: 1848), pp. 230–31.
37. *Silk: Replies from Commissioners of Customs* (The Maritime Customs, II, Special Series, No. 3 (Shanghai: 1917)), pp. 36, 37, 143 and 117. For Imperial establishments, see pp. 36, 71, 113 and 151.
38. *Ibid*, p. 66, p. 98.
39. Geijer, *op. cit.*, pp. 76 and 121; Pl. 61. I am most grateful to Dr. Geijer for being able to include an analysis of the weave of this important piece.
40. I am most grateful to Mrs. Donald King for an analysis of this piece.

41. For demand in Japan, see Saris, *op. cit.*, p. 216. For use as furnishings, see *Memorials of the Empire of Japon in the XVI and XVII Centuries*, edited with notes by Thomas Rundall (Hakluyt Society, Ser. 1, No. 8 London: 1850)), p. 177.
42. Hedde, *op. cit.*, p. 230.
43. No. T. 173–1953, Sample No. 97.
44. I have not been able to examine this piece myself. The information is taken from the manuscript notebooks of George Razy in the Library of the Musée Historique des Tissus, Lyon, Vol. VII, No. 155.
45. No. 09.50.1106.

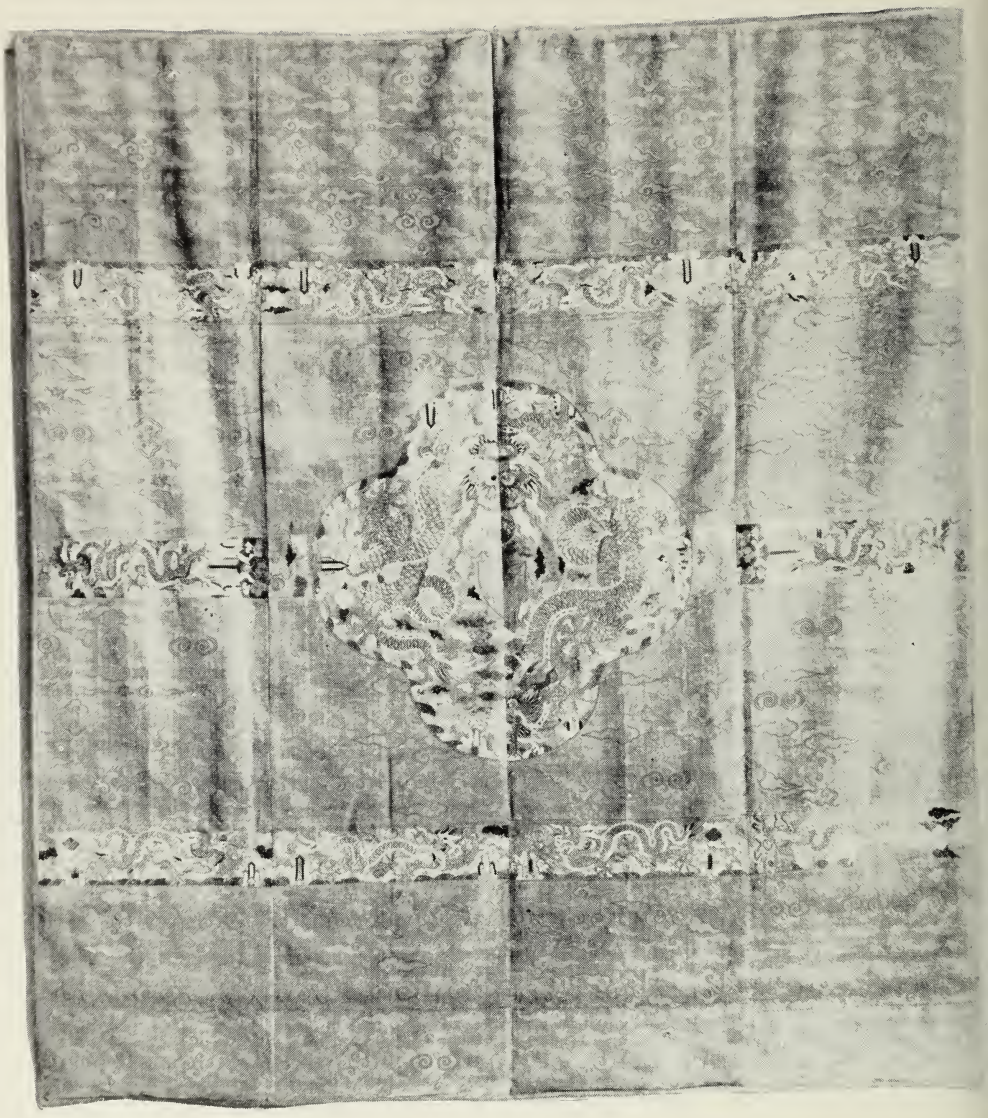
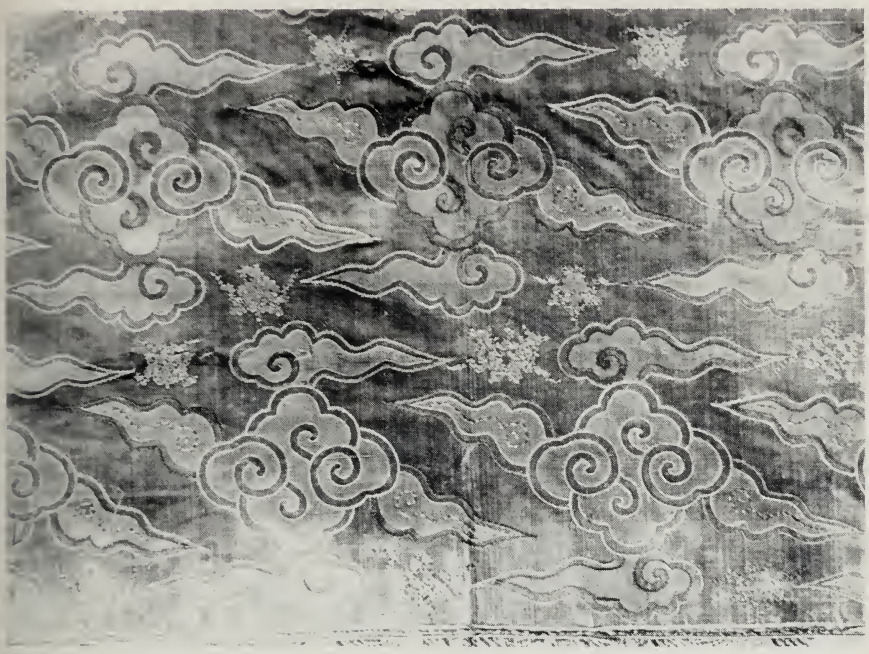


PLATE IV

Ming dragon robe velvet, solid ciselé, embroidered. Early seventeenth century.

PLATE V *Detail of Ming dragon robe velvet showing t'chi and Buddhist emblems.*



Technical Analysis No. 1[1]

I. The Royal Ontario Museum, Toronto, Ontario, Canada. Acc. No. 956.67.2. Pls. IV and V.

II. China, early seventeenth century (Ming Dynasty).

III. Gift of Mrs. Edgar J. Stone.

IV. Widths of Imperial yellow silk velvet embroidered in coloured silks and gold filé, sewn together to make a large panel or hanging four widths wide. The material was originally made for an Imperial Dragon Robe (Ch'ao-fu) which was never made up.

[1] The analyses are based on the form established by Centre International d'Étude des Textils Anciens; see *Bulletin de Liaison*. No. 8 (July, 1958). The diagrams accompanying the analyses are purely schematic. No effort has been made to maintain the relative proportion of the various threads.

V. Height: 3.09 m. Width: 2.72 m.
Width of piece: 0.815 m.
Central Medallion, Height: 1.09 m. Width: 1.094 m.
Horizontal Dragon Bands, Height: 0.19 m.

VI. Condition good, some embroidery silks, particularly the reds and pinks, have faded.

VII. The ground shows a repeated pattern of t'chi (cloud forms) with the eight Buddhist emblems of happy augury. In the centre, a cloud collar (yün-chien) in the form of a four-lobed medallion with two five-clawed front-facing dragons coiling over the shoulders. These are surrounded by multi-coloured clouds, and a wave border from which triple mountains rise at top and bottom. At each side, a single mountain rises from the waves. In the centre, is a shield-shaped space reserved for the neck opening. Above and below the cloud collar are horizontal bands, each bearing four profile dragons on a wave border with multicoloured clouds and mountains. These dragons face towards the centre. Similar horizontal bands run out from each side of the cloud collar, and each contains a profile dragon facing the outer edge. One of the front-facing dragons in the centre, on what would have been the back of the robe, is complete, and grasps the flaming pearl in one claw, and a branch of coral in the other. The other dragon of this pair is incomplete as the material that would have served as the front flap of the robe is missing.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Simple, fast-pile, silk velvet, cut and uncut on the same rod (solid ciselé).

WARP *Proportion*–3 ends main warp: 1 end pile warp.
Main warp–Poil, very slight S twist, imperial yellow, degummed.
Pile warp–Poil, very slight S twist, imperial yellow, degummed, used triple.
Découpure–none.
Thread count–Main warp, 45 per cm. Pile warp, 15 per cm.

WEFT *Proportion*–3 picks ground: 1 velvet rod.
Ground weft–Tram, very slight Z twist, imperial yellow, degummed.
Découpure—none.
Thread count–Weft, 28.3 per cm. Velvet rods, 9.4 per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric of the velvet is derived from a 3/1 twill, and repeats on six ends and six picks. A velvet rod was inserted after every third pick, and in addition the pile warp was raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving: the two picks

preceding a velvet rod were woven with one, and the pick following the velvet rod with the other. The material was woven as a simple uncut velvet, and the velvet rods (probably round) were left in place until the piece was completed. The design was then pounced or painted on the uncut pile by some method that cannot now be determined, and the velvet rods were cut by hand, probably with a sharp knife, as required by the pattern, leaving a design in uncut pile reserved on a cut pile ground. The uncut pile is almost entirely covered by embroidery.

SELVAGE 60 ends poil, S twist, 2-ply Z, imperial yellow, degummed, width 17 mm.
On the inside: 47 threads, woven in modified 2/2 twill.
On the outside: 13 threads, woven in double weave to produce a narrow tubular edge.

DIAGRAM Fig. 3 shows the construction of the velvet.

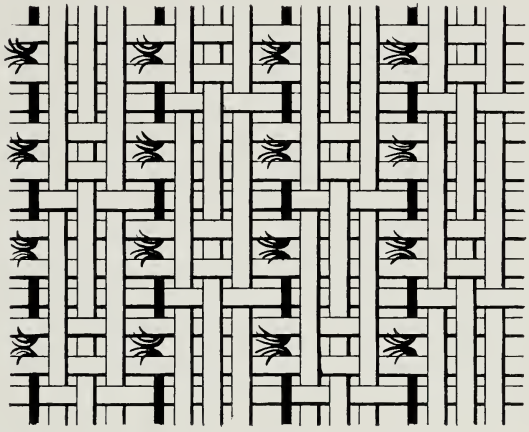


Fig. 3. Foundation fabric derived from 3/1 twill.

C. EMBROIDERY

MATERIALS 1. Poil, slight S twist, slight 2-ply Z, degummed, light blue, dark blue, blue-green, yellow-green, 2 reds, pink, white.
2. A fancy thread made by twisting a 3-ply cordonnet spirally around a similar thread.
3. Filé: paper gold on white paper Z twisted on a red silk core.
4. 3-ply cordonnet.
Stitches. Simple couching, waved couching, and laidwork couched in matching or contrasting colour.

DESCRIPTION T'chi–The details are outlined in couched spiral cordonnet.
Buddhist Emblems–The details are outlined in couched filé used double.
Cloud and mountains–in cloud collar and transverse dragon bands; laidwork in coloured silks held by couched filé.

Flaming Pearls–filé worked in waved couching. Each couching stitch binds three filé threads. The flames are laidwork in red silk held by couched threads of matching colour.

Dragons–The dragon's heads are of filé worked in waved couching, each couching stitch binding three filé threads. The eyes are padded with paper which is covered with dark blue silk. The horns and other details of the head are in laidwork of coloured silk held by couched threads of matching colour. These couched threads are of three weights, and serve to emphasize the form of the various parts. The finest is a poil, the second is vegetable substance, apparently a pine needle about .5 mm. in diameter, wrapped with silk, and the third is a paper core about 1 mm. in diameter, similarly wrapped with silk.

The body of the dragon is laidwork in filé, the form of the scales being outlined by a couched double white cordonnet. The outer edge of each scale is padded with thin rolls of paper about 1 mm. in diameter. The base of the scales is laidwork in light blue silk. This is worked over the filé, and outlined with a single couched white cordonnet.

Other Details–The dragon's feet and claws are worked in the same manner as the head. The spines on the dragon's back and surrounding the head are in silk laidwork outlined with cordonnet. The branch of coral grasped by the dragon is in waved couching, each couching stitch binding two pink silk cordonnet and one filé.

IX. No information is available regarding the dyes used, but the metal of the filé was analyzed by Mr. William Todd, Chief Conservator, Division of Art and Archaeology, Royal Ontario Museum, and found to be 18–24 carat gold.

X. The velvet was woven with a ground harness of 6 shafts for the foundation fabric, a pile harness, and one supplementary shaft for the tubular edge of the selvage.

XI. The article by Mrs. K. B. Brett, Curator of Textiles, Royal Ontario Museum, mentioned below, establishes how the pieces would be put together to make a robe of Ming style. The weave of the foundation fabric of this velvet appears to have been used only in the early seventeenth century.

XII. In support of the statement that the cut and uncut pile were produced by the same rod, see above, pp. 21–24.

XIII. No other similar material is known.

XIV. Mrs. K. B. Brett, A Ming Dragon Robe, *Bulletin of the Division of Art and Archaeology*, Royal Ontario Museum, Toronto. No. 27, June, 1958.

Harold B. Burnham, Un velours impérial chinois d'époque MING—Dossier de recensement, *Bulletin de Liaison du Centre International d'Étude des Textil Anciens*, No. 9 (January, 1959), pp. 53–60.

Technical Analysis No. 2

I. The Royal Ontario Museum, Toronto. Acc. No. 914.13.1. Pls. VI and VII.

II. China, seventeenth century, last quarter.

III. Gift of Mrs. H. D. Warren.

IV. Part of a carpet, silk velvet, composed of one full width and two part widths sewn together. This is said to have been part of the covering of a throne dais in the Jehol Palace.

V. Length, 4.51 m. Width, 1.485 m. Width of piece, 64.5 cm.

VI. Condition, good; all colours except the blues have faded to a certain extent.

VII. Lotus flowers, scrolling stems and leaves, and bats, voided on a jade green pile ground (faded to olive-green). The lotus petals, outlined in silver filé, are in red and pink silks with pods in gold and silver filés. The leaves and stems are in two shades of blue, the bats in gold and silver filés. In the lower piece, the eyes of the bats are brocaded in white silk with painted pupils; in the other two pieces, the eyes are pale blue silk. There is no repeat in either width or height, but the pattern reverses in the centre.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Figured, fast-pile, silk velvet, cut voided, weft-patterned and brocaded with gold and silver filés, and coloured silks.

WARP *Proportion*–2 ends main warp: 1 end pile warp: 1 end binder warp.

Main warp–Poil, very slight Z twist, blue-green, partly degummed.

Pile warp–Poil, slight Z twist, jade green, degummed, used double.

Binder warp–Poil, very slight Z twist, pink, degummed.

Découpure–2 pile ends (2 binder ends).

Thread Count–Main warp, 58 per cm., Pile warp, 29 per cm., Binder warp, 19 per cm.

WEFT *Proportion*–3 picks ground: 1 velvet rod; 1 pass pattern wefts.

Ground weft–grenadine, Z twist, blue-green, hard.

Pattern wefts–Tram, no visible twist, degummed, used double; light blue and dark blue (these are occasionally brocaded rather than weft-patterned).

Brocading wefts–1. Tram, no visible twist, degummed, used double; pink, red, white.

2. Paper gold filé, gold leaf on pink paper Z twisted on pink silk core (1), paper gold filé, gold leaf on white paper Z twisted on

PLATE VI

Velvet carpet (detail), cut voided, weft-patterned and brocaded. Seventeenth century, last quarter.

PLATE VII

Velvet carpet, reverse (detail). Seventeenth century, last quarter. The light-coloured threads are the pattern wefts that are sometimes brocaded.

yellow silk core (2), and paper silver filé, silver leaf on white paper Z twisted on yellow silk core (3). Filé 3 is used throughout all three pieces; filé 1 is used in the upper and lower pieces and in the first 1.045 m., of the centre piece; filé 2 is used for the balance of the centre piece. All three threads are used double.

Découpure–1 velvet rod.

Thread Count–Ground weft, 28 per cm., Velvet rods, 9.33 per cm.

Pattern and brocading wefts, 9.33 passes per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric is a modified 3/1 twill, repeating on four ends and six picks. A velvet rod was inserted after every third pick of ground weft, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving the foundation fabric:

the two picks preceding the velvet rod were woven with one, and the pick following the velvet rod with the other. Both shuttles carried identical yarn. The extra wefts are bound in tabby, and, as is usual in Chinese fabrics, are never woven into the selvage. Both pattern and brocading wefts turn on the back of the material.

SELVAGE 44 ends, poil, slight S twist, slight 3-ply Z, jade green, degummed. Width, 7 mm.
On the inside, 29 ends woven in modified 2/2 twill.
On the outside, 15 ends woven in double-weave to produce a narrow tubular fabric.

DIAGRAM Figs. 4 and 5 show the construction of the velvet and Fig. 14 shows a selvage of similar type from Acc. No. 918.21.225a.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of 4 shafts for the foundation fabric, a binder harness, a pile harness, and one supplementary shaft for the tubular edge of the selvage. Two figure harnesses were required: one for the pile warp, the other for the main warp. As there is no repeat in width, the comber unit equals the width of the material, less selvages, and 866 pulley cords were required.

XI. This is an early example of a type of velvet that was produced from about the middle of the seventeenth century until modern times. (See No. 923.6.2, Technical Analysis No. 9.) It was used both for carpets and for decorative hangings.

XII. The use of two gold filé threads should be noted, as well as the fact that in one piece the eyes of the bats are brocaded in white silk with painted pupils, while those in the others are weft-patterned in light blue silk. As the patterns in all three pieces match perfectly, there is no doubt that they were woven to be used together in their present form. The manner in which the brocading threads turn on the reverse of the fabric raises the possibility that the material was woven face down, and the pile cut after the lengths were completed.

XIII. A portion of a very similar carpet, with identical or almost identical pattern, but with part of the border preserved, is in Musée des Arts Decoratifs, Paris. Inventory No. 18.165. It is illustrated in Henri Algoud, *Les arts de la soie: les velours* (Paris: 1913), Plate 50.

XIV. This piece has not been published before.

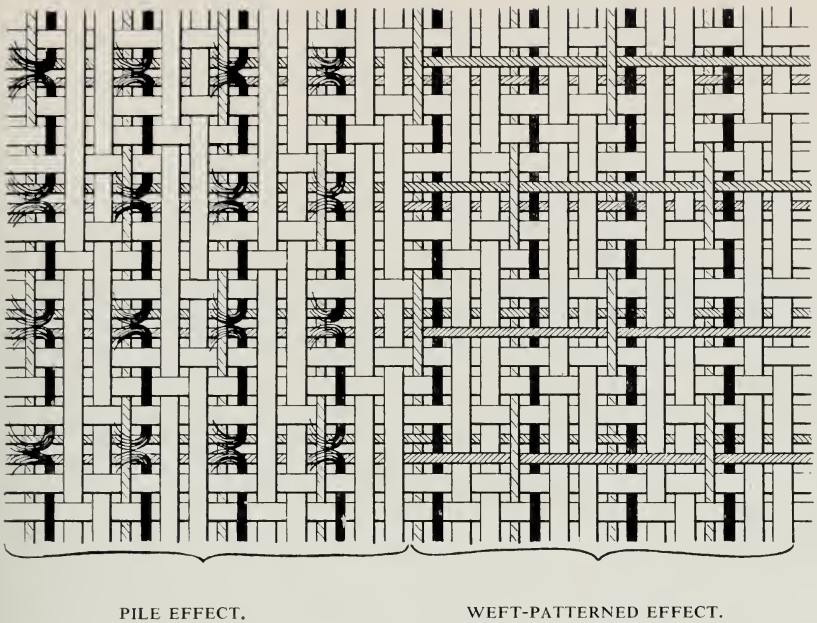


Fig. 4. Modified 3/1 twill with binder warp and pattern wefts. Brocading wefts omitted.

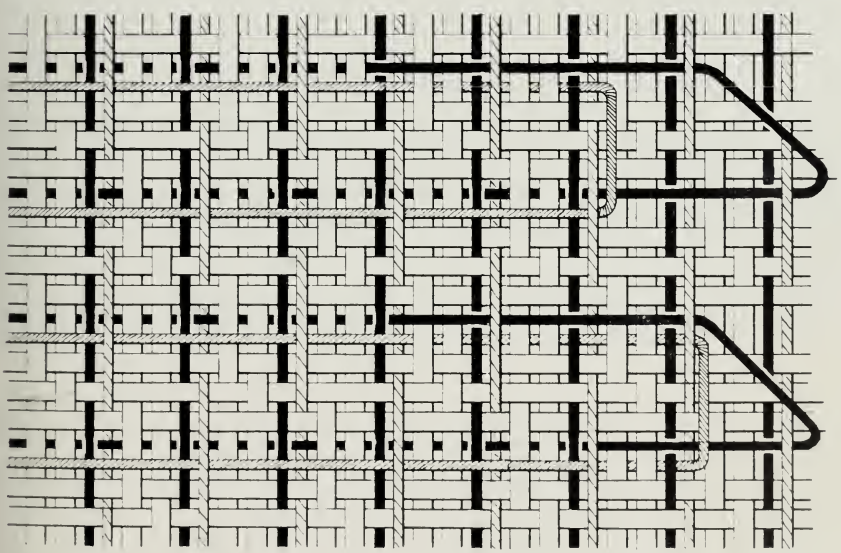


Fig. 5. Modified 3/1 twill with binder warp. Reverse, showing the manner in which the brocading wefts turn. Pattern wefts omitted.

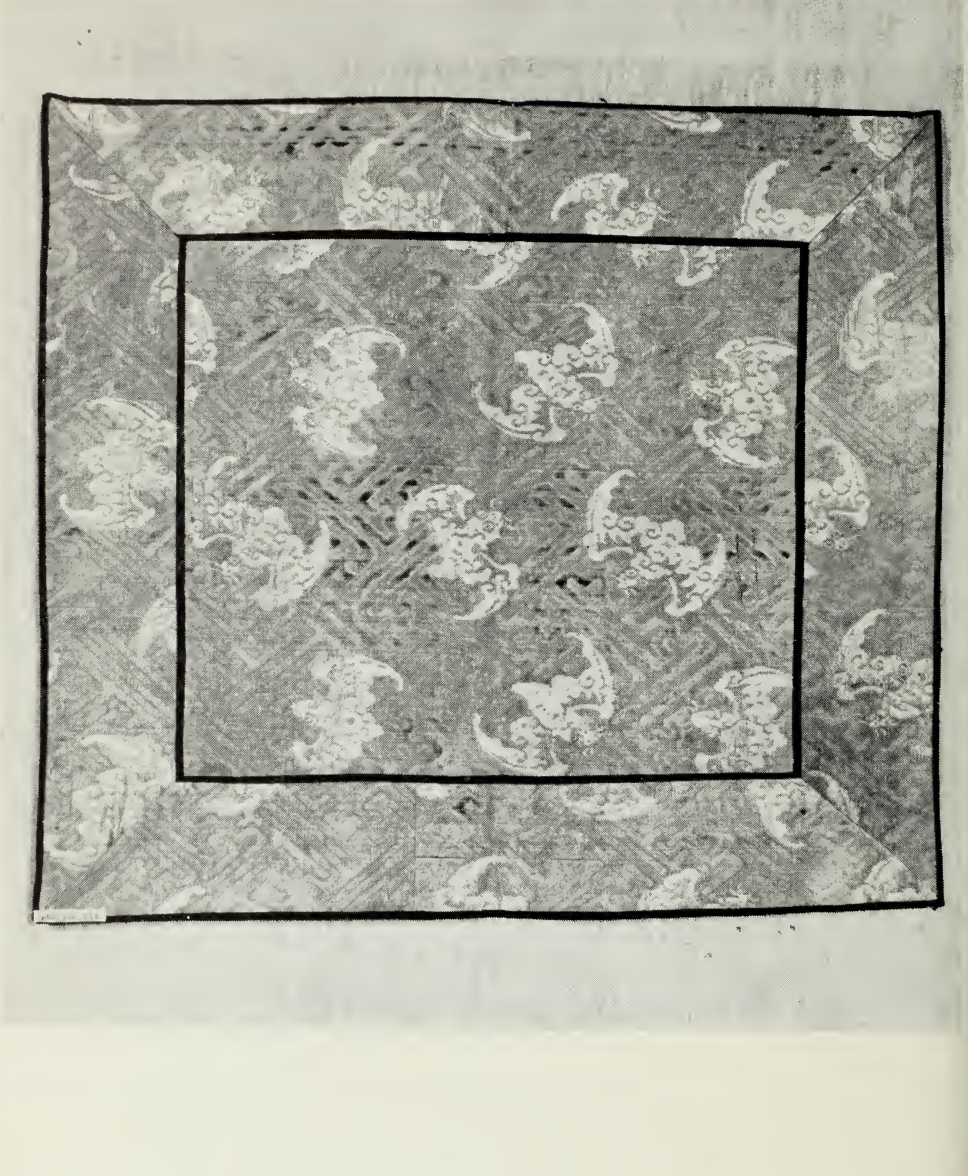


PLATE VIII

Velvet square, cut voided and weft-patterned. Late seventeenth century.

Technical Analysis No. 3

I. The Royal Ontario Museum, Toronto. Acc. No. 950.100.514. Pl. VIII.

II. China, seventeenth century, second half.

III. Gift of Mrs. Sigmund Samuel (ex-Krenz Collection).

IV. Fragments of silk velvet sewn together in modern times to make a small panel.

V. Height: 43.4 cm. Width: 40.5 cm.

VI. Condition, fair; badly faded, pile worn. The main warp has disappeared in the unpatterned, voided areas.

VII. Swastika diaper in blue-green cut pile on a red ground (faded), with bats in contrasting silk.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Figured, fast-pile, silk velvet: cut voided, weft-patterned with contrasting silk.

WARP *Proportion*–6 ends main warp: 2 ends pile warp; 1 end binder warp.
Main warp—Poil, very slight Z twist, originally red, degummed.
Pile warp–Poil, very slight Z twist, blue green, degummed.
Binder warp–Poil, very slight Z twist, originally red, degummed.
Découpure–2 pile ends (1 binder end).
Thread Count–Main warp, 90 per cm., Pile warp, 30 per cm., Binder warp, 15 per cm.

WEFT *Proportion*–3 picks ground: 1 velvet rod: 1 pick pattern weft.
Ground weft–Tram, very slight S twist, originally brown, degummed.
Pattern weft–Tram, no visible twist, cream, degummed, used double.
Découpure–1 velvet rod.
Thread Count–Ground weft, 36 per cm., Velvet rods, 12 per cm., Pattern weft, 12 per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric which is derived from 5/1 broken twill, is a 6-end irregular satin. It repeats on six ends and six picks. A velvet rod was inserted after every third pick, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. As there is no trace of selvage, the shuttle order cannot be determined. The pattern weft is bound in tabby.

SELVAGE None.

DIAGRAM Fig. 6 shows the construction of the velvet.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of six shafts for the foundation fabric, a binder harness, a pile harness, and one supplementary shaft for the tubular edge of the selvage. Two figure harnesses were required: one for the pile warp, the other for the main warp. In no part of the panel is more than one complete repeat preserved. For this 240 pulley cords were required.

XI. This, and the piece mentioned in Section XIII, are the only examples seen where a supplementary weft has been employed, with a foundation fabric derived from 5/1 twill.

XII. No special comment is required in regard to conditions of execution.

XIII. A similar square of the same material is in The Metropolitan Museum of Art, New York.

XIV. This piece has not been published before.

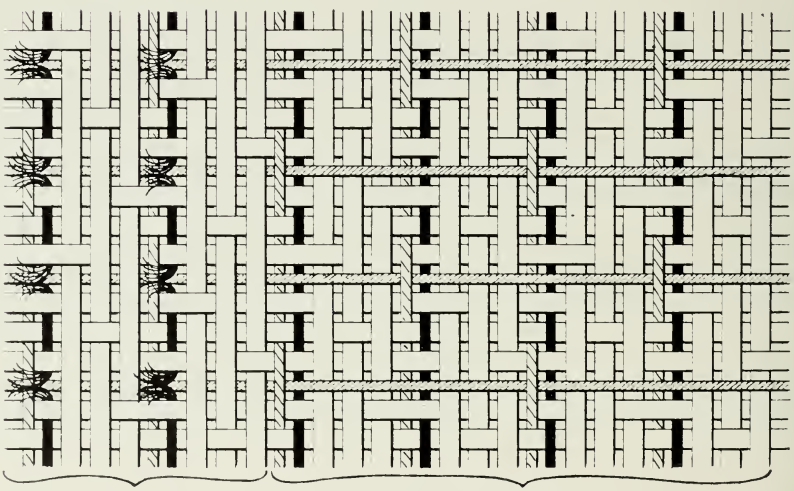


Fig. 6. 6-end irregular satin with binder warp and pattern weft.

PLATE IX *Velvet, uncut voided. K'ang-hsi period (1622–1722).*

Technical Analysis No. 4

I. The Royal Ontario Museum, Toronto. Acc. No. 950.100.506. Pl. IX.
II. China, K'ang-hsi period (1662–1722).
III. Gift of Mrs. Sigmund Samuel (ex-Krenz Collection).
IV. Fragment of silk velvet.
V. Length, 1.166 m. Width, 24.4 cm.
VI. Condition good, pile worn along outer edge.
VII. A pattern of chrysanthemums with scrolling branches bearing small leaves in terracotta pile on a yellow-brown ground; a swastika fret border at each end. The pattern repeat is nine motives in height, reversing on the central, fifth motive. In either half of the pattern, the second and fourth motives are identical, and the first and centre ones are similar to the third. (Compare Acc. No. 914.7.21, Technical Analysis No. 7.)

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Figured, fast-pile, silk velvet, uncut voided.

WARP *Proportion*–3 ends main warp: 1 end pile warp.
Main warp–Poil, slight Z twist, yellow-brown, degummed.
Pile Warp–Poil, slight Z twist, terracotta, degummed, used double.
Découpure–2 pile ends.
Thread Count–Main warp, 84 per cm., Pile warp, 28 per cm.

WEFT *Proportion*–3 picks ground: 1 velvet rod.
Ground weft–Tram, no visible twist, yellow-brown, degummed.
Découpure–1 velvet rod.
Thread Count–Ground weft, 39 per cm., Velvet rods, 13 per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric, which is derived from 5/1 broken twill, is a 6-end irregular satin. It repeats on six ends and six picks. A velvet rod was inserted after every third pick, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving: the two picks preceding the velvet rod were woven with one, and the pick following the velvet rod with the other. The shuttles carried identical yarn.

SELVAGE 72 ends, poil, S twist, very slight 2-ply Z, yellow-brown, degummed.
Width, 8 mm.

On the inside, 61 ends woven in 6-end irregular satin, the same weave as the ground.
On the outside, 11 ends woven in double-weave to produce a narrow tubular fabric.

DIAGRAM Fig. 7 shows the construction of the velvet, and Fig. 8 the selvage.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of six shafts for the foundation fabric, a pile harness, a figure harness to control the pile warp, and a supplementary shaft for the tubular edge of the selvage. As the repeat in width is incomplete, it is not possible to establish the number of pulley cords employed.

XI. This is the only example of uncut velvet seen. The use of a 6-end irregular satin for the foundation fabric has been found only in this piece, and in Acc. No. 950.100.514 (Technical Analysis No. 3). It appears to pre-date the use of 5/1 broken twill.

XII. No special comment is required in regard to conditions of execution.

XIII. No similar material is known.

XIV. This piece has not been published before.

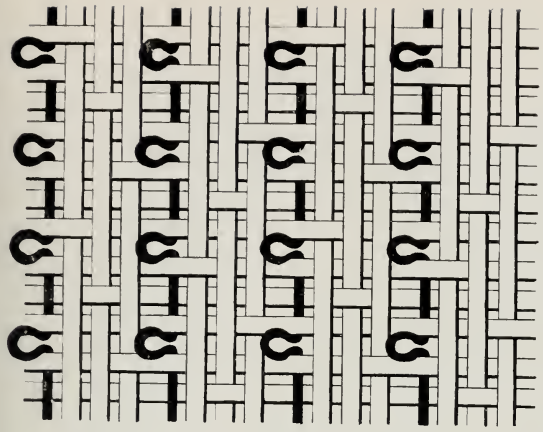


Fig. 7. 6-end irregular satin with uncut pile.

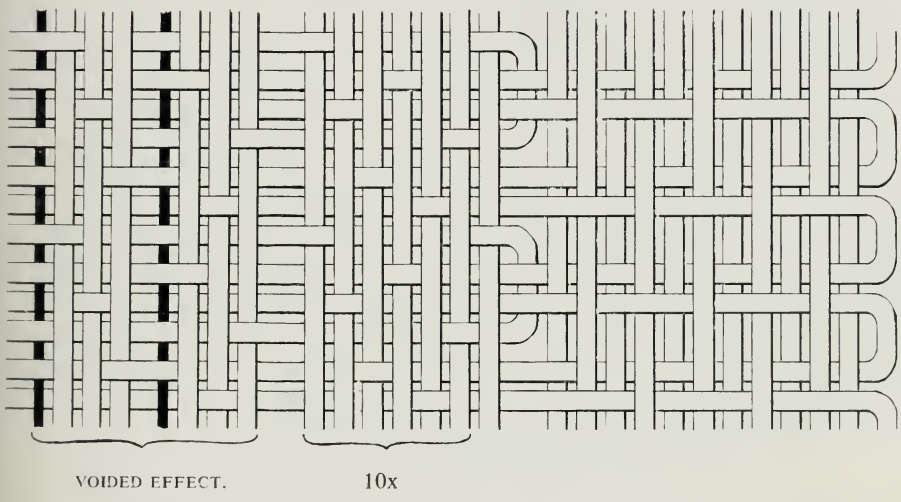


Fig. 8. Selvage–6-end irregular satin with tubular edge.

PLATE X

Velvet coat, cut voided. Eighteenth century.

Technical Analysis No. 5

I. The Royal Ontario Museum, Toronto. Acc. No. 909.12.3. Pl. X.
II. China, eighteenth century.
III. Purchased.
IV. Dark blue silk velvet coat, with light blue silk velvet sleeve-bands bordered with plain black silk velvet. Lined with white silk damask.
V. Length, 1.117 m.
VI. Condition, good; some slight wear on the sleeve-bands; lining stained.
VII. The coat is patterned with undulating stems with peonies, chrysanthemums and foliage. In the spaces between the flowers are flying phoenixes. The sleeve-bands show tree peonies and butterflies, and are edged with plain black velvet. The pattern of the damask lining is similar to that of the sleeve-bands.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS COAT

Figured, fast-pile, silk velvet, cut voided.

WARP *Proportion*–3 ends main warp: 1 end pile warp.
Main warp–Poil, Z twist, dark blue, degummed.
Pile warp–Poil, Z twist, dark blue, degummed, used double.
Découpure–2 pile ends.
Thread Count–Main warp, 90 per cm., Pile warp, 30 per cm.

WEFT *Proportion*–3 picks ground weft: 1 velvet rod.
Ground weft–Tram, slight S twist, dark purple-blue, degummed.
Découpure–1 velvet rod.
Thread Count–Ground weft, 39 per cm., Velvet rods, 13 per cm.

A. GENERAL CHARACTERISTICS SLEEVE-BANDS

Figured, fast-pile velvet, cut voided.

WARP *Proportion*–3 ends main warp: 1 end pile warp.
Main warp–Poil, Z twist, pale blue, degummed.
Pile warp–Poil, Z twist, medium blue, degummed, used double.
Découpure–2 pile ends.
Thread Count–Main warp, 90 per cm., Pile warp, 30 per cm.

WEFT *Proportion*–3 picks ground; 1 velvet rod.
Ground weft–Tram, slight S twist, pale blue, degummed.
Découpure–1 velvet rod.
Thread Count–Ground weft, 39 per cm., Velvet rods, 13 per cm.

B. DETAILS OF STRUCTURE COAT AND SLEEVE-BANDS

The weave of the foundation fabrics is a 5/1 broken twill, repeating on six ends and six picks. A velvet rod was inserted after every third pick, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. In the coat, one selvage is intact, and it shows that two shuttles were used in weaving: the two picks preceding the velvet rod were woven with one, and the pick following the velvet rod with the other. The yarn carried by the shuttle is identical except for a slight difference in shade. This same difference holds true for the sleeve-bands, and, although no selvage remains, the same shuttle order can be ascertained.

SELVAGE (COAT) 54 ends, poil, slight Z twist, used double, irregularly striped in pink, yellow and imperial yellow.
Width 9 mm.
On the inside, 45 ends woven in 4/2 twill.
On the outside, 9 ends woven in double-weave to produce a narrow tubular fabric.

DIAGRAM Fig. 9 shows the construction of the velvet, and Fig. 10 the selvage.

IX. No information is available regarding the dyes used.

X. Both velvets were woven with a ground harness of six shafts for the foundation fabric, a pile harness, a figure harness to control the pile warp, and a supplementary shaft for the tubular edge of the selvage. There are two repeats in the width of the fabric. The number of pulley cords in a comber unit has not been established.

XI. The quality of the drawing precludes a dating later than the eighteenth century, particularly when compared with similar velvets of known nineteenth-century date. When it is possible to compare a number of velvets of this type, a stylistic sequence will probably emerge which will make it possible to establish more exact dating within given periods for this type of material.

XII. No special comment is required in regard to conditions of execution.

XIII. In style, the velvet of this coat is very similar to some of other coats and robes in The Royal Ontario Museum, although none of them have the same pattern. A coat, a robe, and a length of velvet have the same pattern as the sleeve-bands, but are in different colours.

XIV. This piece has not been published before.

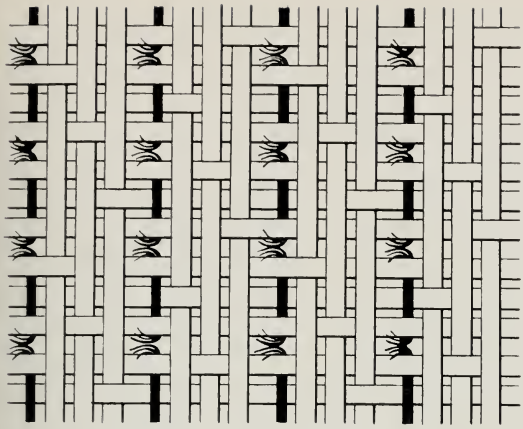


Fig. 9. 5/1 broken twill.

Proportion 3 ends main warp : 1 end pile warp.

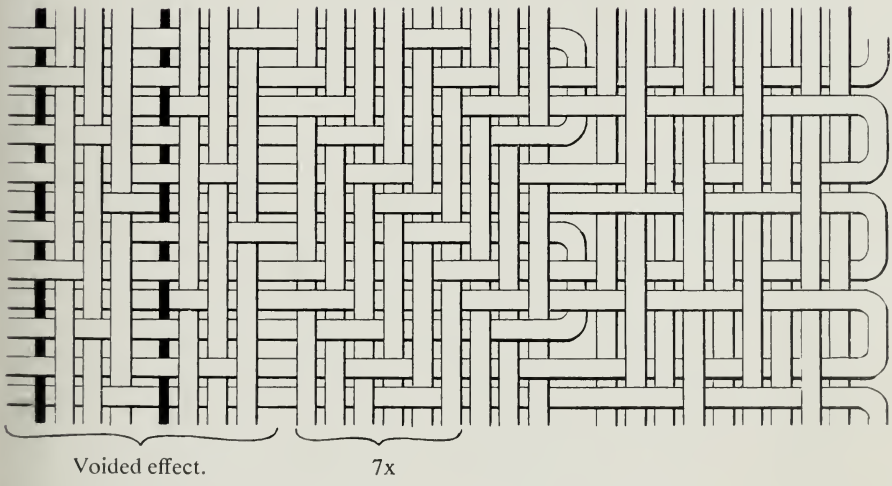


Fig. 10. Selvage—4/2 twill with tubular edge.

PLATE XI

Velvet, cut voided. Early nineteenth century.

Technical Analysis No. 6

I. The Royal Ontario Museum, Toronto. Acc. No. 909.16.16. Pl. XI.
II. China, early nineteenth century.
III. Purchased.
IV. Fragment of velvet.
V. Length, 53 cm. Width, 37.2 cm.
VI. Condition good, slightly faded.
VII. Antique vases with flowers and floral sprays; birds sitting in the branches. Small sprays between the vases. A dragon-fly hovers over one vase, and a butterfly over another. The motives are in yellow pile on a yellow ground.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Figured, fast-pile silk velvet, cut voided.

WARP

Proportion–6 ends main warp: 1 end pile warp.
Main warp–Poil, Z twist, yellow, degummed.
Pile warp–Poil, Z twist, yellow, degummed, used triple.
Découpure–2 pile ends.
Thread Count–Main warp, 96 per cm., Pile warp, 16 per cm.

WEFT

Proportion–3 picks ground: 1 velvet rod.
Ground weft–Tram, slightest S twist, yellow, degummed.
Découpure–1 velvet rod.
Thread Count–Ground weft, 40.5 per cm., Velvet rods, 13.5 per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric is a broken 5/1 twill, repeating on six ends and six picks. A velvet rod was inserted after every third pick, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving the foundation fabric: the two picks preceding the velvet rod with the other. Both shuttles carried identical yarn.

SELVAGE

44 ends, poil, slight Z twist, slight 3-ply S, white, dark blue, and full orange, degummed.
Width 7 mm.
On the inside, 32 ends (8 dark blue, 8 white, 8 dark blue, 8 white), woven in 4/2 twill.
On the outside, 12 ends, dull orange, woven in double-weave to produce a narrow tubular fabric.

DIAGRAM Fig. 11 shows the construction of the velvet and Fig. 10 a selvage of similar type from Acc. No. 909.12.3.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of six shafts for the foundation fabric, a pile harness, a figure harness for the pile warp, and one supplementary shaft for the tubular edge. As the fragment is not complete in width, the number of comber units cannot be ascertained, but may have been three. The pulley cords required have not been counted.

XI. This is an example of material woven probably woven for the European market as its style differs from that of materials used in China. Earlier examples of export material have been seen, particularly two pieces in Museu Nacional de Arte Antiga, Lisbon (Inventory Nos. 2179 and 2180).

XII. No comment is required regarding conditions of execution.

XIII. Pieces of the same material are in the Victoria and Albert Museum, London. (No. T. 65–1873.)

XIV. K. B. Brett, *Bouquets in Textiles* (Toronto, 1955), p. 18 and accompanying plate.

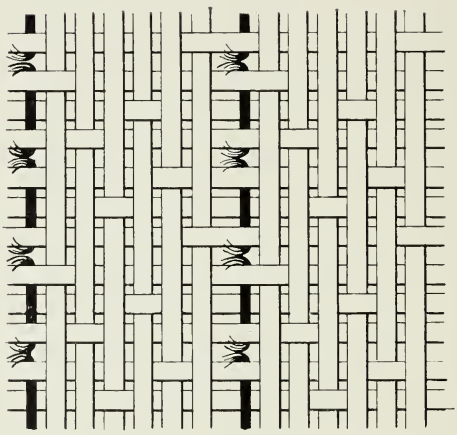


Fig. 11. 5/1 broken twill.

Proportion, 6 ends main warp : 1 end pile warp.

Technical Analysis No. 7

I. The Royal Ontario Museum, Toronto. Acc. No. 914.7.21. Pl. XII.
II. China, nineteenth century, first half.
III. Purchased, 1914.
IV. Fragment of silk velvet.
V. Length, 96.3 cm. Width, 50 cm.
VI. Condition good. The pile was originally an imperial yellow; some of the patterning silks have faded.
VII. A pattern of chrysanthemums weft-patterned and brocaded on a tawny yellow pile ground. The flowers have scrolling branches bearing small leaves, weft-patterned in dark blue and green silks. The pattern is nine motives in height, and reverses on the central fifth motive. In either half of the pattern, the second and fourth motives are identical, and the first and central ones are similar to the third. (Compare Acc. No. 950.100.506, Technical Analysis No. 4.)

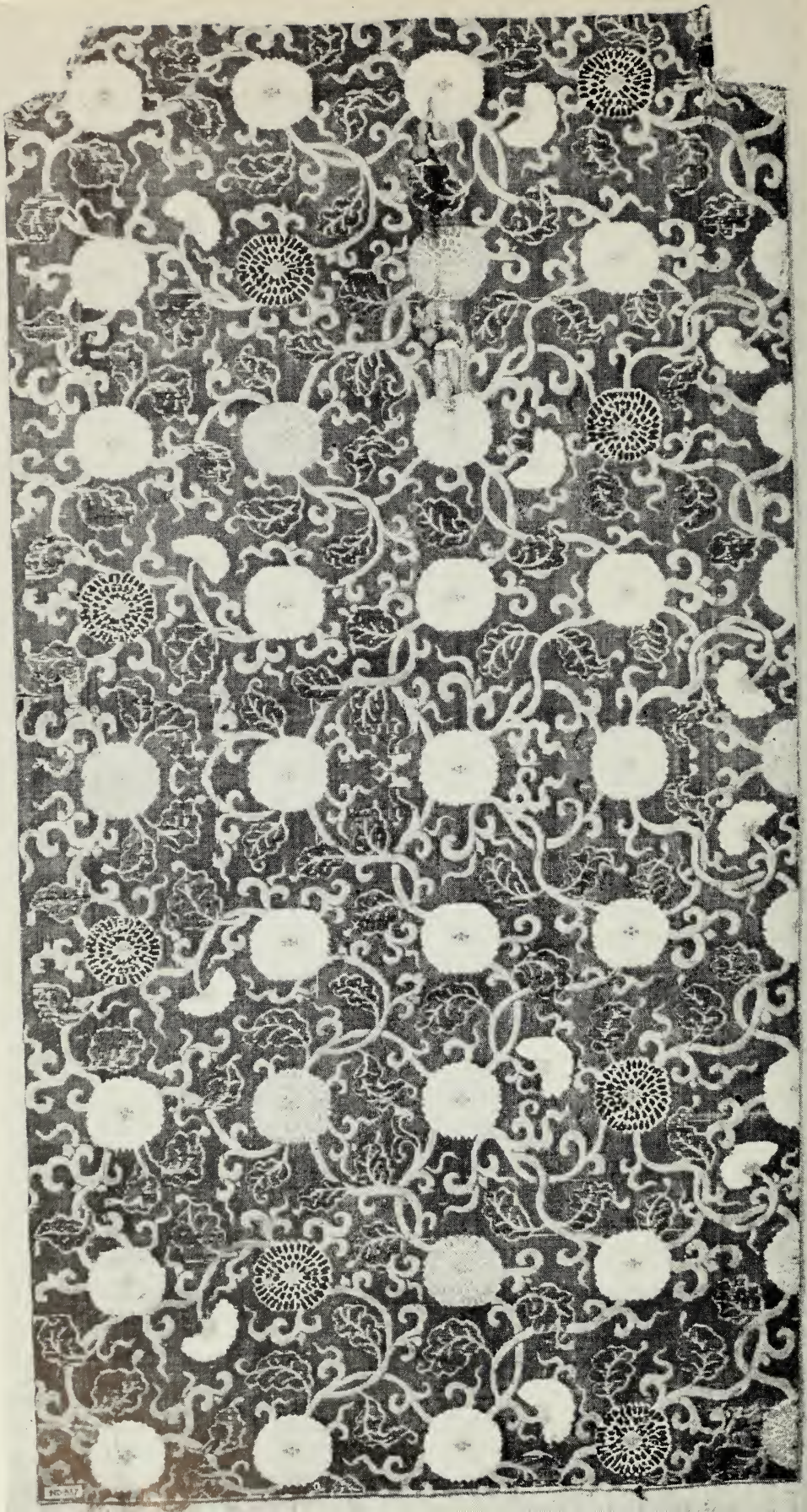
VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Figured, fast-pile silk velvet, cut voided, weft-patterned and brocaded with coloured silks.

WARP *Proportion*–2 ends main warp: 1 end pile warp: 1 end binder warp.
Main warp–Poil, slight Z twist, pale yellow, partially degummed.
Pile warp–Poil, slight Z twist, imperial yellow, degummed, used triple.
Binder warp–Poil, very slight Z twist, pink, degummed.
Découpure–2 pile ends.
Thread Count–Main warp, 52 per cm., Pile warp, 26 per cm., Binder warp, 26 per cm.

WEFT *Proportion*–3 ground picks; 1 velvet rod: 1 pass pattern wefts.
Ground weft–Poil, no visible twist, pale yellow, partially degummed.
Pattern wefts–Tram, no visible twist, degummed, used double, light blue (originally green), dark blue, pale yellow and pale pink.
Brocading wefts–Tram, no visible twist, degummed, used double, white, pale violet, pink, medium blue, dark blue, red.
Découpure–1 velvet rod.
Thread Count—Ground weft, 54.5 per cm., Velvet rods, 14.2 per cm. Pattern and brocading wefts, 14.2 passes per cm.



B. DETAILS OF STRUCTURE

The weave of the foundation fabric is a modified 3/1 twill, repeating on four ends and six picks. A velvet rod was inserted after every third pick of ground weft, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving the foundation fabric: the two picks preceding the velvet rod with one, and the pick following the velvet rod with the other. Both shuttles carried identical yarn. The extra wefts are bound in tabby, and, as usual in Chinese fabrics, are never woven into the selvage. Both pattern and brocading wefts turn on the back of the material.

SELVAGE 48 ends poil, Z twist, degummed, pale yellow and imperial yellow.
Width, 7.5 mm.
On the inside, 38 ends, pale yellow woven in modified 2/2 twill.
On the outside, 10 ends, imperial yellow, woven in double-weave to produce narrow tubular fabric.

DIAGRAM Figs. 4 and 5 show the construction of a similar type from Acc. No. 914.13.1 and Fig. 14 a similar selvage from Acc. No. 918.21.225a.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of four shafts for the foundation fabric, a binder harness, a pile harness, and one supplementary shaft for the tubular edge of the selvage. Two figure harnesses were required: one for the pile warp, the other for the main warp. As the repeat in width is incomplete, the comber unit cannot be established.

XI. This is a decadent, later example of the pattern in Acc. No. 950.100.506, Technical Analysis No. 4. Despite this it is of good quality. Technically, it is the same construction as Acc. No. 914,13.1, Technical Analysis No. 2.

XII. The only technical comment required is to note that the extra wefts turn entirely on the back of the fabric. This raises the possibility that the material was woven face down, and the pile cut after the length was completed.

XIII. No similar material is known.

XIV. This piece has not been published before.

PLATE XII

Velvet, cut voided, weft-patterned and brocaded. Early nineteenth century.

PLATE XIII *Velvet table cover, solid cut in two colours of pile. Mid-nineteenth century.*

Technical Analysis No. 8

I. The Royal Ontario Museum, Toronto. Acc. No. 950.100.567. Pl. XIII.
II. China, mid-nineteenth century (Chang-chou?).
III. Gift of Mrs. Sigmund Samuel (ex-Krenz Collection).
IV. Silk velvet table cover, two widths wide.
V. Length, 2.02 m. Width, 1.23 m. Width of piece, 63.7 cm.
VI. Condition good, a few splits.
VII. The pattern is in green pile on a poppy red pile ground, and consists of two five-clawed dragons pursuing a flaming pearl. They are surrounded by clouds and scattered flames. Surrounding this central panel is a lotus border.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Figured, two colour, fast-pile silk velvet, solid cut.

WARP *Proportion*–2 ends main warp: 2 ends pile warp (1 red, 1 green).
Main warp–Poil, slight Z twist, red, degummed.
Pile warp–Poil, slight Z twist, red, and green, degummed, used double.
Découpure–1 pile end.
Thread Count–Main warp, 52 per cm., Pile warp, red, 26 per cm. Pile warp, green, 26 per cm.

WEFT *Proportion*–3 picks ground weft: 1 velvet rod.
Ground weft–Poil, S twist, red, degummed.
Découpure–1 velvet rod.
Thread Count–Ground weft, 33 per cm., Velvet rods, 11 per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric is a modified 3/1 twill, repeating on four ends and six picks. A velvet rod was inserted after every third pick, and both parts of the pile warp were raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving: the two picks preceding the velvet rod were woven with one, and the pick following the velvet rod with the other. The shuttles carried identical yarn.

SELVAGE 44 ends, poil, Z twist, red, degummed.
Width, 8 mm.
On the inside, 33 ends woven in modified 2/2 twill.
On the outside, 11 ends woven in double-weave to produce a narrow tubular fabric.

DIAGRAM Fig. 12 shows the construction of the velvet, and Fig. 14 a selvage of similar type from Acc. No. 918.21.225a.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of four shafts for the foundation fabric, a pile harness, a figure harness to control both parts of the pile warp, and a supplementary shaft for the tubular edge of the selvage. The comber unit is equal to the width of the piece, less selvages. The number of pulley cords employed has not been established.

XI. This is undoubtedly similar to the pieces mentioned on page 000 above which Isidore Hedde obtained in Chang-chou between 1843–46.

XII. No special comment is required in regard to conditions of execution.

XIII. A chairback of similar style is in The Royal Ontario Museum, Acc. No. 948.57.11.

XIV. This piece has not been published before.

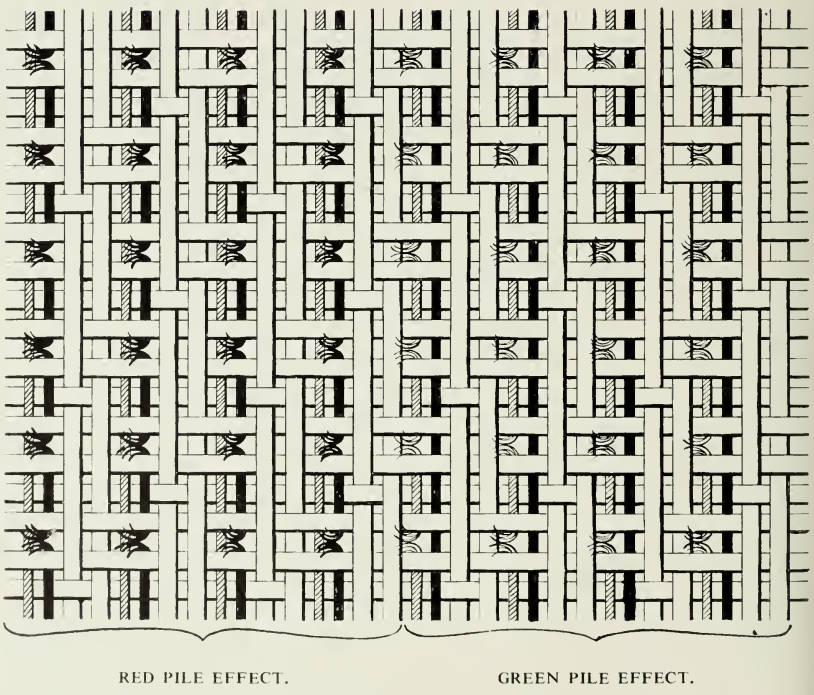


Fig. 12. Modified 3/1 twill with pile in two colours.

Technical Analysis No. 9

I. The Royal Ontario Museum, Toronto. Acc. No. 918.21.225a. Pl. XIV.

II. China, *c.* 1900–10.

III. Purchased, The George Crofts Collection.

IV. Yellow silk velvet hanging, four widths wide.

V. Length, 3.965 m. Width, 2.44 m. Width of piece, 64.3 cm.

VI. Condition good, some small stains.

VII. In the centre, the Taoist Paradise with the Eight Immortals, and attendants; above this central group, Cheou, God of Longevity and Hsi-wang-mu, Ruler of the Western World. Surrounded by three borders: the centre one shows four of the Immortals on each side, and auspicious mythological scenes at top and bottom. On each side of the central border is a narrower one with antique dragons pursuing flaming pearls.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Simple, fast-pile, silk velvet, cut and uncut on the same rod (solid ciselé).

WARP *Proportion*–2 ends main warp: 1 end pile warp.
Main warp–Poil, slight Z twist, yellow, degummed.
Pile warp–Poil, slight Z twist, yellow, degummed.
Découpure–None.
Thread Count–Main warp, 46 per cm., Pile warp, 23 per cm.

WEFT *Proportion*–3 ground picks (1 pick cotton, 2 picks silk): 1 velvet rod.
Ground weft–(1) Poil, slight Z twist, pale brownish-yellow, degummed.
(2) Cotton, S singles, orange-yellow (approximately No. 8 cotton count).
Découpure–none.
Thread Count–Ground wefts, 34.5 per cm. 23 silk, 11.5 cotton), Velvet rods, 11.5 per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric is a modified 3/1 twill repeating on four ends and six picks. A velvet rod was inserted after every third pick, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving: the two picks preceding a velvet rod were woven with one carrying the silk weft, and the pick following the velvet rod with the other carrying the coarser cotton yarn.

PLATE XIV *Velvet hanging, solid ciselé. 1900–1910.*

SELVAGE 32 ends cordonnet, S twist, 2-ply Z, yellow, deep pink and red, degummed.
Width 6 mm.
Selvage order; 1 yellow, 1 deep pink 10 times, 20 ends; 12 red, 12 ends.
On the outside 25 ends woven in modified 2/2 twill.
On the inside, 7 ends woven in double-weave to produce a narrow tubular fabric.

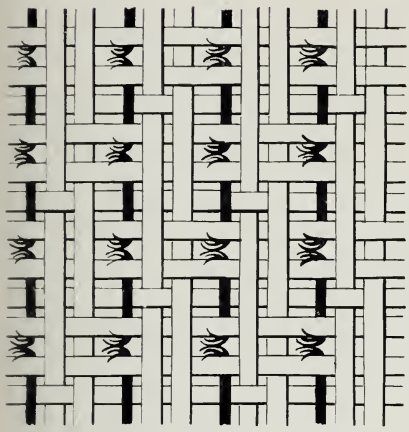


Fig. 13. Modified 3/1 twill.

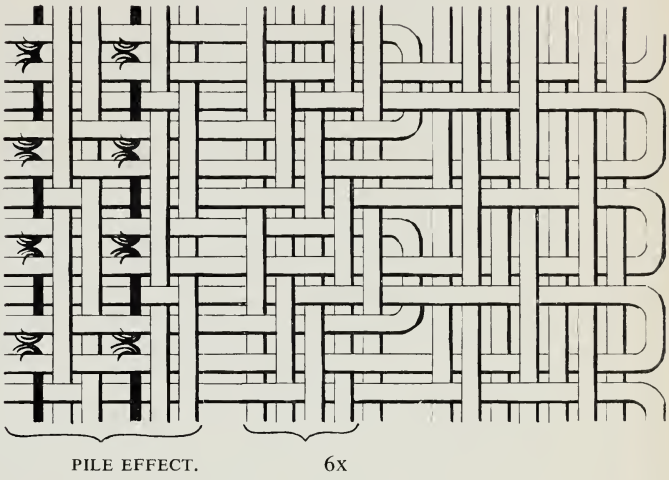


Fig. 14. Selvage—Modified 2/2 twill with tubular edge.

DIAGRAM Fig. 13 shows the construction of the velvet, and Fig. 14 the selvage.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of four shafts for the foundation fabric, a pile harness, and one supplementary shaft for the tubular edge of the selvage.

XI. This hanging was purchased in China early in the twentieth century. It was new at the time.

XII. In support of the statement that the cut and uncut pile were produced on the same rod, see above, pp. 21–24. Marks may be seen outlining the edges of the pattern motives which appear to have been made by stamping the uncut pile, probably with a heated metal die.

XIII. This panel is one of a pair with the same pattern. The other is Acc. No. 918.21.225b. A number of smaller contemporary panels, some with motifs identical to details of the pattern in these hangings, are in The Royal Ontario Museum.

XIV. This piece has not been published before.

PLATE XV

Velvet carpet, cut voided and weft-patterned. 1910–20.

Technical Analysis No. 10

I. The Royal Ontario Museum, Toronto. Acc. No. 923.6.2. Pl. XV.
II. China, 1910–20.
III. Purchased. The George Crofts Collection.
IV. Figured silk velvet carpet, three widths wide.
V. Length, 3.66 m. Width, 1.88 m. Width of piece, 63.9 cm.
VI. Condition, excellent.
VII. Dark blue silk velvet, cut voided; quatrefoil central medallion surrounded by red peonies and brown, red and gold leaf scrolls. Three borders: a fret border, a lotus border, and a border of antique dragons in the same colours.

VIII. TECHNICAL DESCRIPTION

A. GENERAL CHARACTERISTICS

Figured, fast-pile, silk velvet, cut voided, weft-patterned with gold filé, and coloured silks.

WARP *Proportion*–4 ends main warp: 2 ends pile warp: 1 end binder warp.
Main warp–Poil, slight Z twist, dull blue, degummed.
Pile warp–Poil, slight Z twist, dark blue, degummed, used triple.
Binder warp–Poil, very slight Z twist, dull red, degummed.
Découpure–2 pile ends (1 binder end).
Thread Count–Main warp, 56 per cm., Pile warp, 28 per cm. Binder warp, 14 per cm.

WEFT *Proportion*–3 picks ground: 1 velvet rod: 1 pass pattern wefts.
Ground weft–Tram, no visible twist, dull blue, degummed.
Pattern wefts–(1) Tram, no visible twist, red and brown, degummed, used double. (2) Paper gold filé, gold leaf on white paper, Z twisted on a pink silk core, and paper gold filé, gold leaf on white paper, Z twisted on a red silk core. These two filés are used together in the same shed.
Découpure–1 velvet rod.
Thread count–Ground weft, 34 per cm., Velvet rods, 11.3 per cm., Pattern wefts, 11.3 passes per cm.

B. DETAILS OF STRUCTURE

The weave of the foundation fabric is a modified 3/1 twill, repeating on four ends and six picks. A velvet rod was inserted after every third pick of ground weft, and the pile warp was raised over the second pick of each series to produce a fast-pile velvet. Two shuttles were used in weaving the foundation fabric: the two picks preceding the velvet rod were woven with one, and the pick following the velvet rod with the other. Both shuttles carried

identical yarn. The extra wefts are bound in tabby, and as is usual in Chinese fabrics, are never woven into the selvage.

SELVAGE 24 ends, cordonnet, S twist, 2-ply Z, pale yellow, degummed. Width 6 mm.

On the inside 19 ends woven in modified 2/2 twill.

On the outside, 5 ends woven in double-weave to produce a narrow tubular fabric.

DIAGRAM Fig. 4 shows a similar construction from Acc. No. 914.13.1, and Fig. 14 a similar selvage from Acc. No. 918.21.225a.

IX. No information is available regarding the dyes used.

X. The velvet was woven with a ground harness of four shafts for the foundation fabric, a binder harness, a pile harness, and one supplementary shaft for the tubular edge of the selvage. Two figure harnesses were required; one for the pile warp, and one for the main warp. The comber unit for the lengths on the sides of the rug are equal to the width of the piece, less selvages. The pattern of the centre length is symmetrical, and would normally require two comber units, one reversed. It seems more likely that it was woven with the same mounting as the lengths on the sides, with the one comber unit tied to give the symmetrical pattern. The number of pulley cords has not been established.

XI. This rug was purchased in China within a few years of the fall of the Ch'ing dynasty in 1911. It was one of a group that were described at the time as being in the style of the Ch'ien-lung period. Part of the group was sold at auction in New York in 1913.

XII. No special comment is required in regard to conditions of execution.

XIII. No similar rug has been traced, although it is possible that some were included in the sale mentioned in Section XI.

XIV. This piece has not been published before.